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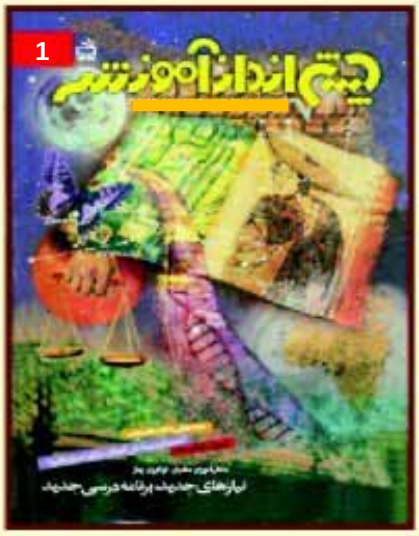

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Perspectives

More or Less?

A dozen years ago, I was the editor of a best-selling study skills curriculum for middle school students. Although we received several fan letters about the usefulness of the program, I recall an angry criticism from one teacher. He demanded to know why we felt compelled to jam in so much information and so many activities. Didn't we know that "less is more"? he asked.

Of course, I had heard of "less is more" as a principle of graphic design. Designers are always suggesting that white space matters as much as the illustrations and even—so they say—more than the text. Looking into the idea as a design principle for good curriculum, I found that educators were arguing for less coverage and more depth. For example, as Heidi Hayes Jacobs notes (p. 12), Japanese 8th graders master eight mathematics concepts, whereas U.S. students, who tackle about 35, often have a superficial grasp of the concepts' meanings and can only regurgitate facts for the test.

"Less is more" certainly makes sense, although at the time I wondered why the teacher didn't just eliminate the lessons he thought less worthy and create his own curriculum. Today, though, he might not have time to tackle any part of that program because the subject matter—study skills—would probably not be on a state-mandated test. But what else is driving curriculum design today? And, more important, what principles *should* be shaping the curriculum?

Knowledge is proliferating. Approximately 1,000 books are published throughout the world every day. More information has been produced in the past 30 years than in the previous 5,000. Having such a glut of information available at the touch of a mouse demands new skills lest students be overcome by what Richard S. Wurman calls "information anxiety." Wurman defines information anxiety as the ever-widening gap between what we understand and what we think we should understand. Information anxiety is "a black hole between data and knowledge." It happens when information tells us a great deal, but not what we want or need to know (cited in Jungwirth & Bruce, 2002).

Kids don't just learn in school anymore. School curriculum has never been a student's only source of knowledge. Long ago, John Dewey warned that the greatest fallacy in education is the assumption that students learn only what they are being taught (1938). At ASCD's annual conference last year, Gary Marx discussed trends shaping education. Among them:

> We're going to have increasing numbers of students coming to our schools with more information on a lot of topics than their teachers have. . . . It means that we have a lot of kids with not much life experience who have a lot of data and information. The teacher will help move those kids from raw data and information toward usable knowledge, and then, we hope, toward wisdom. (2003)

We're increasingly teaching what we test. It used to be only students who asked the question, Will it be on the test? Today, teachers and curriculum developers care a great deal about aligning curriculum with mandated assessments. The days of inventing creative curriculum solely to appeal to teacher or student interest are waning. This tendency need not be a catastrophe if more students achieve true proficiency in reading, mathematics, and science. But there are caveats:

> Do the standards focus on preparing students for the future? Or do they freeze the system and prepare students for the past? . . . Is it possible that every year we could do a better and better job on those high-stakes tests and every year do a better job of preparing our kids for some time in the past? Second, there's a concern that some students might simply give up. . . . One way to increase average test scores is to push the kids out who aren't doing well. And those scores will go up—the tyranny of the average. (Marx, 2003)

We must remember our priorities. The last point is the most important. As Elliot W. Eisner says (p. 6),

> As long as schools treat test scores as the major proxies for student achievement and educational quality, we will have a hard time refocusing our attention on what really matters in education. . . . The primary aim of education is not to enable students to do well in school, but to help them do well in the lives they lead outside of school.

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Marge Scherer

—Marge Scherer

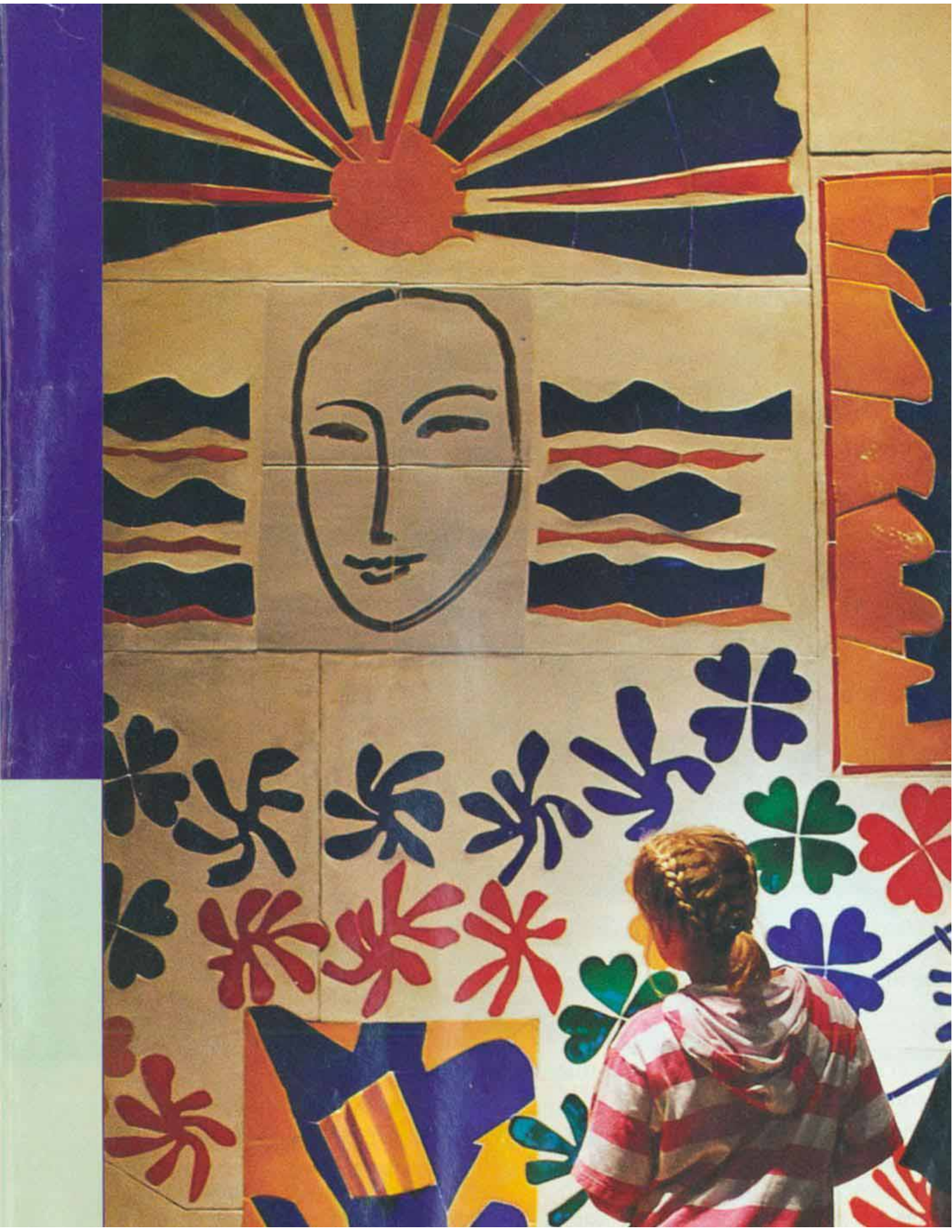
Preparing for Today and Tomorrow

The unknowable future is not a sound basis on which to plan curriculum.

Elliot W. Eisner

At first glance, the idea of designing a curriculum that prepares students for the future seems unassailable. After all, education is not only for the present. Students will be living in a world different from the one they now occupy, and schools should enable them to deal with that world.

As unassailable as such an idea appears, who among us can tell what the future will look like? Projections about lifestyles, social arrangements, and problems that will be encountered are notoriously difficult. Who could have predicted 20 years ago the challenges that adults address today? Indeed, some of the most significant weaknesses of education policy stem from the belief that the aims and content of education can be justified on the basis of preparation. "Some day you will need this" is a familiar refrain heard both in schools and around the kitchen table. Alas, such an exhortation does little to stimulate or motivate students.



If an unknowable future is not a sound basis on which to plan curriculum and instruction, then what is? From my perspective, we can best prepare students for the future by enabling them to deal effectively with the present.

School curriculums based on the preparatory conception of education are often intellectually irrelevant or become little more than hoops through which students learn to jump in order to move ahead. Too much of what we do now in schools is of the hoop-jumping variety.

In a democracy, the last thing we need is a one-size-fits-all curriculum with one single set of goals for everyone.

What I desire is an education process that is genuinely meaningful to students, challenging them with problems and ideas that they find both interesting and intellectually demanding. I want to assess that process by the depth of its engagement in students' lives.

Of course, regardless of their view of the future, people have different beliefs about what is important for students to learn in the here and now. For example, many educators value the development of critical mindedness, but some parents may reject this goal because critical mindedness can challenge values promulgated at home. The point is that even if we agree that education should address the present, what constitutes appropriate preparation for the present is itself a contested issue. That, in a democracy, is as it should be. The last thing we need is a one-size-fits-all curriculum with one single set of goals for everyone. Diversity yields richness, and diversity in schooling is a source of richness for our culture. Having said that, let me comment on a number of aims that I embrace as being appropriate for our schools.

What Schools Should Teach

Judgment. The best way to prepare students for the future is to focus on the present in a way that enables students to deal with problems that have more than one correct answer. The problems that matter most cannot be resolved by formula, algorithm, or rule. They require the exercise of that most exquisite human capacity that we call judgment. Judgment is not mere preference, but rather the ability to give reasons for the choices that we make. Good judgment requires good reasons. The disposition and critical acumen that make good judgment possible are among the most important abilities that schools can cultivate in students.

To cultivate this quality, the curriculum needs to consist of problems that permit judgment. Such problems require deliberation and yield multiple possible resolutions. Note that I say *resolutions* rather than solutions. Problems of a substantial magnitude usually need to be considered from various angles and can only be temporarily resolved. The majority opinions of the U.S. Supreme Court justify the Court's findings, but an acceptable finding in one period in the nation's history may no longer be appropriate at another time. We should teach students that the practices of deliberation and judgment go hand in hand.

Critical thinking. A second ability that schools need to develop in students is the ability to critique ideas and to enjoy exploring what one can do with them. To develop this ability, students must be presented with ideas that are worth exploring. Several decades ago, Jerome Bruner identified three questions to guide the development of his curriculum *Man—A Course of Study:* What is human about man? How did he get that way? What can make him more so? Each of these three ideas can be explored and discussed in class at a level appropriate to the students' age.

Powerful ideas are those that have legs, that take students someplace. The idea of random mutation and natural selection, the relationship between culture and personality, and the protection of minority rights in a government in which the majority rules are examples of the ideas that students might critically examine, explore, and explicate. Each of these ideas is inexhaustible. The problem for students is to tease out their implications and to apply those implications not to tomorrow, but to today.

Meaningful literacy. A third aim for schools is to cultivate multiple forms of literacy. Literacy is normally conceived of as the ability to read and write. Sometimes computational skill, or numeracy, is added to the concept. I mean something considerably broader, however. Literacy involves the ability to encode or decode meaning in any of the symbolic forms used in the culture. For example, one can be literate in one's ability to experience and derive meaning from music, from the visual arts, or from dance.

Our lives are enriched by the ability to secure wide varieties of meaning. Schools that neglect some cultural forms, such as the arts, guarantee that they will graduate semiliterate students—students for whom the arts will be other people's pleasures. Of course, these students may well

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respond to the popular arts. But we cannot anticipate that they will be responsive to the more classical and complex forms that represent extraordinarily high levels of artistic accomplishment. The ability to experience such forms meaningfully requires instruction.

But I don't want to lose the larger point. By defining literacy broadly, we can identify areas in which some school programs are lacking. Programs that focus essentially on the conventional use of language or the formal use of numbers can limit students' ability to secure meaningful experience from other forms of representation.

Different forms of representation evoke, develop, and refine the modes of thinking that contribute to the cultivation of what is broadly called *mind*. The school curriculum that excludes such resources neglects the development of mind to its fullest capacities. Although brains are primarily biological, mind is mainly a form of cultural achievement. The provision of opportunities in the school curriculum for students to encounter a variety of forms of representation not only engenders meaning that is specific to each form, but also promotes the growth of mind.

To push this idea even further, we might say that the primary aim of education is to enable youngsters to learn how to invent themselves—to learn how to create their own minds. Cultural literacy provides not only *recreation* but also *re*-creation. What we re-create throughout life is the self.

Collaboration. A fourth aim for schools that can make a difference in the lives of students here and now is the provision of opportunities to learn to work with others collectively, cooperatively, and in harmony. We tend to think about schools as producing solo performances. We also need to think about schools as helping students learn to work collaboratively with others, particularly with students who are culturally different from themselves. What we ought to seek through education is both individuation and integration.

By individuation, I mean that schools ought to cultivate what is personally and productively idiosyncratic about each student. Schools ought to promote the realization of each student's distinctive talents, aptitudes, and proclivities. And at least to some degree, schools ought to help students identify their individual strengths and make it possible for them to follow their bliss.

But schools should also help students learn how to work with others on meaningful projects. The process of collaboration gives birth to new ideas and develops social skills that matter in a democracy. Schools should provide ample opportunity for such activities to take place and for the forms of learning that those activities promote to be realized. Education, after all, is more than an individual affair. At a time when a sense of community seems to be dissipating in our neighborhoods, the opportunity to form community through collaborative work in schools is especially important.

Service. Related to collaborative work is a fifth aspiration for schools today: the creation of conditions through which students can make a contribution to the larger community. Schooling should be about more than individual achievement intended to serve one's own personal ambitions. Providing payback to the community makes sense, not only as a form of appropriate socialization, but also as a moral virtue.

Service learning moves in this direction. In addition to formal service learning programs, schools should plan opportunities for all students to have some connection with cultural centers, social agencies, medical institutions, and other community resources to which they might make some contribution. We are so wrapped up in test scores that we often marginalize the importance of developing socially responsible citizens who are willing to contribute to the larger social welfare

Creating a Timely

A Conversation with Heidi Hayes Jacobs

Preparing students for tomorrow requires that we thoughtfully reexamine and rethink the curriculum.

Deborah Perkins-Gough

Education consultant Heidi Hayes Jacobs has worked with thousands of teachers in the United States and internationally to develop curriculum maps. Here she talks with Educational Leadership *about curriculum changes that would better prepare students for the 21st century.*

You're well known for your work in curriculum mapping. Could you explain to us what curriculum mapping is and how it helps teachers and students?

Curriculum mapping is a procedure for collecting data about the operational curriculum in a school and in a district—the instruction that students are experiencing. By mapping what's actually taught and when it's taught, teachers produce data that they can use in conjunction with assessment data to make cumulative revisions in instruction.

The key to mapping is that each teacher enters the data electronically. Colleagues share immediate access to the data, so they can find out what curriculum is being taught down the hall, what was taught in previous years, and what might be taught the following year. Because teachers have direct access to this information electronically, they don't have to go to so many curriculum meetings. And when they do go to meetings, they can talk about the students' actual curriculum journey.

What led you to develop curriculum mapping?

In the early '90s, I worked with schools across the United States and overseas on how to improve the quality of their curriculum units and courses. In meetings, teachers would often refer to curriculum guidelines to help them make decisions about curriculum content.

It struck me that guidelines were being misunderstood. The function of a guideline isn't to tell you what kids have actually experienced; it's to provide goals. Think of the difference between an itinerary and a trip. An itinerary is my guideline for a trip. My real trip may look very different—in fact, it undoubtedly will.

At curriculum planning meetings, people were talking about what was *supposed* to have happened, but in fact that curriculum may *not* have happened. Learners may have taken longer on a particular unit. Maybe the teacher found a better way. Maybe some students moved more quickly. Nevertheless, people were making curriculum decisions on the basis of a false reality. To have an integrated curriculum, we needed a more authentic picture.

How has your work in mapping prepared you to help educators think about curriculum content?

Mapping provides an active tool to give people better access to the truth about what's happening in classrooms—not just so they can keep track of curriculum content, but so they can change it in response to students' needs. When we examine maps, one of the tasks is to review curriculum

Curriculum

content and assessments for timeliness. After looking at hundreds of curriculum maps over the years, one thing that has startled me is how dated the content is.

Schools are launching pads, launching our kids into their futures. Unfortunately, a lot of what we teach now looks identical to what we taught 40, 50, or 60 years ago. There's a need for both *timeless* curriculum content and *timely* content. What seems to be falling by the wayside is timely content. We have to make decisions about what we shed and what we keep—and some of what we're holding on to is predicated on outdated ideas about the needs of Jason and Maria and Abdul and Sally.

Let's talk about some of the curriculum changes you see as important. What should we shed, and what should we keep?

Because most of our standards are written within subject areas, a good way to grapple with your question is to look at it through various subjects.

One important area is social studies, and one area that we should rethink is state history. People in the United States are highly transient. Families move from state to state. So why do we take a full year—in some states, two years—to study state history? It takes time away from more important topics.

For younger students, a deeper, richer study of U.S. history makes more sense. Rooted in the word *history* is *story*. And America's story is exceptional. It's amazing. Younger students should learn that we have always been and continue to be a land of immigrants—a land committed to bold new ideas. That's more timely than saying, "I have to know every detail about the history and geography of my particular state," when I'm likely to move in the next few years.

When we look at curriculum maps, we see early U.S. history repeated again and again throughout grades K–12. The result is that our students know almost nothing about the last 50 to 75 years of not only U.S. history but also world history. Teenagers tend to be defiant by nature, and they resist curriculum experiences that are reminiscent of experiences they had when they were younger. The curriculum for middle and high school students should build on the elementary school curriculum. Students should learn about recent U.S. and world history and global issues that are crucial for them as future citizens.

How do you see citizenship education fitting in with such a social studies curriculum?

Passive citizenship is a contradiction in terms. We need to rethink the design of citizenship courses. Students should look at such issues as defining active patriotism and examining viable dissent. The U.S. Constitution is a remarkable document that keeps growing, responding to each chapter in our

national story. Students should study it in depth as a commanding political and literary work.

Why not have a course in high school called Becoming an Active Voter? We have an extraordinarily low voter turnout in the United States. Kids say, "What difference does it make? Adults aren't voting." We create that passivity by teaching citizenship and government *at* kids as opposed to engaging them in issues-based, activity-based, voter-oriented, and yes, community service–oriented curriculum. Students should have opportunities to become politically active in their communities throughout middle and high school.

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A recent report published by the Albert Shanker Institute,* Education for Democracy, *laments the fact that schools are not teaching students what it means to "be American." Does your view of citizenship education support that report's findings?

A lot of that report was right on target in terms of the deficit in student learning about the American experience, in part because of the disproportionate amount of time spent on state history. But the American experience is now more than ever an interaction with the world. Our students are also going to need to be citizens of this planet.

Whatever one's politics, it must be acknowledged that the United States needs to take a look at increasing students' global knowledge. It will be their world. The United States is geographically isolated, with only two bordering countries. According to the U.S. Department of State, only a small percentage of U.S. citizens hold active passports—around 10 to 12 percent—and in a given year, maybe 7 to 10 percent of those go abroad.

We need to prepare our students for a very different world. No matter where we live, our future will be shaped by global politics and global economics. Many state standards do not require global studies or pay little attention to them.

Our schools must take a hard look at building a strong sense of our national heritage and a respect for the marvelous country we live in—and at the same time the world in which it resides. Technology provides a link. Many remarkable programs allow kids to interact with their peers in other parts of the United States and abroad.

How about some other curriculum areas? What changes do we need in science and math?

Although we say we want to have world-class scientists, we often see a lack of rigor in science programs in the United States. We need to look at the various science arenas—environmental planning, earth science, space science, the life sciences, and the physical sciences, for example—more as a K–12 issue. We need a more balanced approach in the early grades, and we need to develop programs that support more independent science research.

If we wanted to have a world-class football team, we'd have a better shot at that team if we provided them with uniforms, equipment, coaches, and all kinds of support. If you want to have world-class achievement in science, school districts must provide more support in middle and high school to our first-string science students.

For example, in the state of New York, 10th grade students can participate in an independent scientific research project that will last three years. And every year, almost without exception, when the Intel-Westinghouse Scholarship awards come out, New York State students win at least 25 percent of them.

We also need to consider including in the science curriculum the ethical repercussions of scientific work—issues such as cloning, reproductive decision making, the international cost of phar-

maceuticals, and so on. These are issues that our students will have to deal with. At the same time, we need to maintain a separation between religion and the science curriculum in our schools. An educated person should know about religious beliefs and their impact on history and on the present, but social studies is the logical place for those studies, not science.

As for math, we have a real problem in the United States in math instruction for young children. We refer to this strategy as "snapshot mathematics." Early childhood curriculum maps typically show four weeks of addition, four weeks of subtraction, four weeks of metrics, and four weeks of telling time—but little conceptual work. We move kids along rapidly.

Schools in other parts of the world have a longer school year and a longer school day. They have more time, but they don't try to jam so much into the school year. In Japan, on average, students work through about eight math concepts in 8th grade. For each concept, students not only do the math, but they're also able to tell you in their own words what they're doing. In the United States, in 8th grade, students cover about 35 math concepts on average.

U.S. teachers need the chance to slow down and teach a more solid, language-oriented math curriculum. The instructional focus should be more on translating the language of mathematics. Frequently, I see math classrooms with row upon row of students watching a teacher speak fluently in mathematics. Student speech—genuine student reflection—receives minimal attention. To be literate in math, students need to practice listening and speaking skills—retelling, describing, and using analogies.

The overwhelming majority of assessments in math classes are still quizzes and tests. The rarest form of assessment in math is the formal examination of students' ability to retell in their own speech what they're doing. And yet, we're teaching a language.

How about language arts? Educators often debate what literature students must read and what literacy skills they should have. What is your response to these issues?

We need to take a second look at more expansive and contemporary genre studies. Shakespeare is not only timeless but also relevant to the moment. The great works in literature are always timely.

But those classics also need to be seen in light of more contemporary genres. After all, what century are we living in here? Students should be reading screenplays and teleplays by the time they are in middle and high school. They should have a chance to write in those forms as well. They should be dealing with not only book anthologies but also Web site anthologies.

U.S. teachers need the chance to slow down and teach a more solid, language-oriented math curriculum.

From early childhood, the curriculum should emphasize media literacy and criticism. We learn to critique books, but if there's one pervasive influence today, it's television. We need to give students more cognitive sieves so that they can sort out the impact of TV and think about "Who's telling the story? Is this authentic? Am I being manipulated here?"

I'd love to see more work with video conferencing and electronic interviews. Students could interview others across the United States and in other countries. Which brings up another point about literacy: Modern language instruction is central to global literacy. A broader view of languages beyond the usual offering is important for our future and for our security needs.

How do you see the arts fitting into the curriculum for the future?

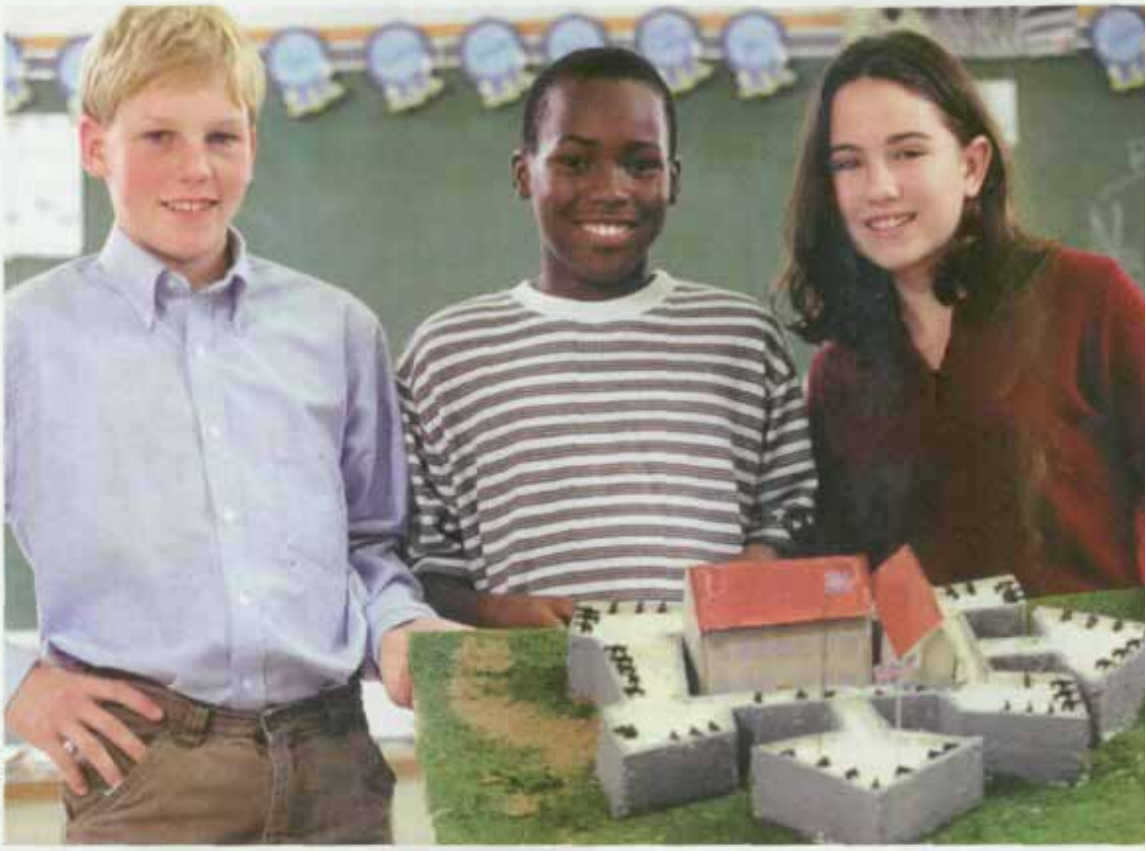
The focus on the arts is central to what it means to be human. Curriculum discussions in the United States often marginalize the arts. The education systems in most other countries—especially industrialized countries, but even developing ones—reflect how important it is to be culturally literate.

When I travel in other countries, I often visit museums. On occasion, I'll see groups of students lying down on the floor with sketchpads. They're clustered around some great works of art, making drawings of those works. And after they've done their own reproductions, their teachers ask them to do a drawing of their own that expresses the feelings that the artwork set off in them. These kids are not necessarily artistically gifted. This instruction is an active way to expand students' minds and combine the essential components of cultural literacy and creative expression. This should be a fundamental experience of all our students, whether it's a trip to a local art gallery or to the Metropolitan Opera.

We need to provide opportunities for studio work and performance work in our classes and also much more work with our local institutions. Although national institutions, such as the Kennedy Center or Carnegie Hall, and various local museums are often actively involved in trying to raise student awareness of great traditions of self-expression, we're negligent in some areas. You're very likely to see students writing original stories in an English class. But it's rarer to find music programs in which students have a chance to do original music compositions, original playwriting and producing, or original choreography. Our arts program would be stronger if we had a balance between more cultural literacy—for

example, appreciation of great music performance—and opportunities for more original work in a range of forms.

Are state content standards holding back the kind of innovations that you've described? Or can they be a positive force in making the curriculum more timely?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Every state is different. The United States does not have a national curriculum, nor will it ever, as long as funding comes through states and localities. It's as if there were 50 countries with distinctive approaches to standards.

In general, though, one would have to argue that most states are not seriously focusing on the questions we're raising here. We cannot operate as though standards are fine the way they are, as though knowledge stands still. Standards need to be constantly debated and rethought. The American Medical Association regularly reviews medical standards on the basis of best practice and what's timely. You don't want people using medical standards established 40 years ago—and yet, in education we do that. There is a great unevenness in how individual states are handling hard questions, on a regular basis and in a formal way, about the issue of timeless and timely content.

Unfortunately, educators are confusing the push for state testing through No Child Left Behind with the standards movement. Most educators want to be responsive to students and to the larger world. But the discussions in our communities about curriculum—Are some of these standards unimportant? Should some be dropped and others added? Can we make some a little better?—aren't happening. Those discussions are being overridden by the focus on two or three testing days when 3rd graders sit anxiously for three hours, knowing that they may be held back because of their inability to do well on a restrictive set of test items.

We need to prepare our students for a very different world.

In different parts of the United States, different sections of standards are outdated. But even if the majority of schools wanted to upgrade them or rethink them, their hands are tied because they're juggling this testing dilemma.

We hear school leaders say, "Listen, the main thing is that our students have to pass these tests—no one's really holding us accountable for dealing with all of these standards. So we're going to have to focus on the standards our students are being tested on." That's the reality. That's what's playing out there. It amounts to a curriculum ambush.

How can schools and teachers deal with that test pressure?

The field of education, like every other field, keeps growing and altering. The tests will be refined and improved. But no matter what happens, the one subset of skills that's requisite for any test or any assessment is literacy. Every test these kids take entails reading. Schools can't lose when they help students become more discriminating and discerning readers; more critical responders in their writing; and more effective speakers, reflective listeners, and active note-takers.

All of those skills are worth working on throughout the grades. If schools put more time and attention into cross-disciplinary literacy and K–12 mapping of literacy, students will do better in all classes. And when the students encounter any kind of testing situation, their performance levels will increase. Every test is first and foremost a language test.

One of the big messages that has

come out of curriculum mapping is the absence of consistent approaches to reading, writing, speaking, and listening in every single class. Learning will always rely on language capability. That's true in every subject—even physical education, where kids have to listen very carefully so they don't look silly when they go out on the basketball court.

The focus on literacy across the grades and subjects is a direction worth pursuing, even as we debate and wrangle over the power and the nature of testing.

How does curriculum mapping contribute to our continuing efforts to improve curriculum?

Curriculum mapping has great potential to help educators reexamine and renegotiate content standards. Mapping isn't like anything we did 10 years ago. We couldn't have done it then—it's electronic. I can make changes on a curriculum map immediately because I can go to my computer, pull up the map, and enter changes. Standards are not filed away on dusty shelves. We can electronically begin to rethink, renegotiate, look at performance data, and look at changes in the world. As better Internet-based programs have emerged and teachers have had more input, we are merging assessment data directly into the maps.

Electronic mapping can give teachers immediate and powerful control over the curriculum. And in the future, who knows? I think most communications will be paperless. We'll be communicating in a more timely way—and also, I hope, about an expansive, contemporary, timely curriculum. ■

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Deborah Perkins-Gough is Senior Associate Editor, *Educational Leadership*.

Teaching What

On February 1, 1994, the U.S. Postal Service added a new postage stamp honoring Allison Davis to its Black Heritage Series. An important figure in psychology, social anthropology, and education for more than 40 years, Davis was the first person from the field of education to be elected to the American Academy of Arts and Sciences (Unicover, 2003).

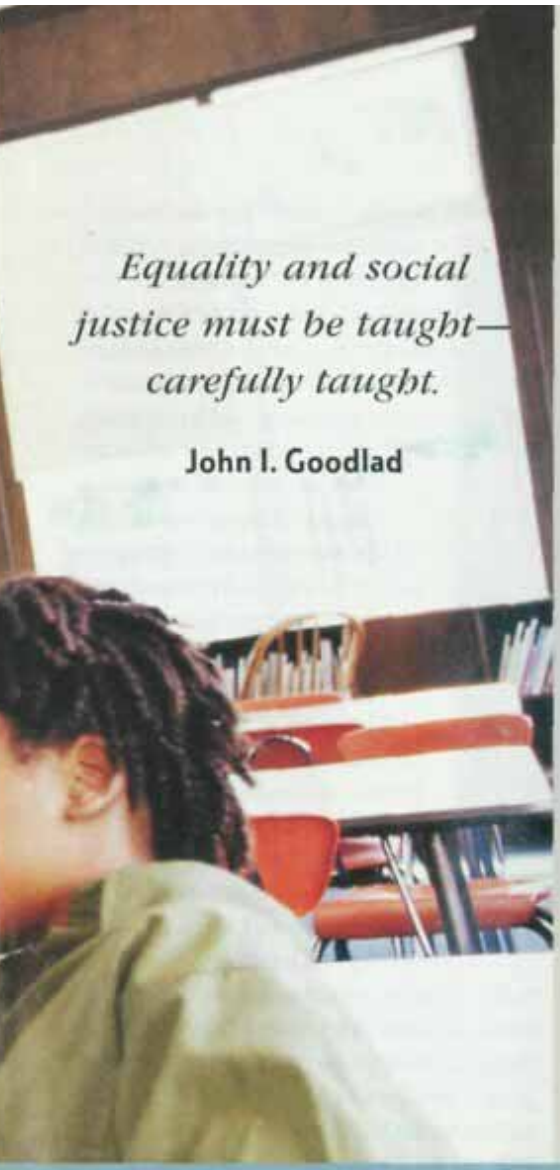
In the 1940s, Davis became the first African American ever appointed to a tenured position at a major "white" university, the University of Chicago. His appointment was controversial. Ralph Tyler, chairman of the department of education, and Robert M. Hutchins, president of the university, overcame the opposition's pretext of lack of funds for hiring Davis by securing private funding to underwrite Davis's salary and related expenses for the first three years.

Even so, Davis did not gain access to the amenities that his colleagues took for granted. He unsuccessfully sought housing in the surrounding Hyde Park neighborhood. He was ineligible for membership in the university's Quadrangle Club until women, too, finally gained admittance in 1948. And he could not find living quarters and mixed-race meeting places when conducting field research in the South and the Southwest (Finder, in press).

Much of Davis's research centered on the effects of the color-caste system in U.S. society, particularly on the ways in which biases in standardized intelligence tests unfairly stigmatized poor and minority students. With colleague Robert Havighurst, Davis produced a series of papers arguing that

> the American social class system actually prevents the vast majority of children of the working classes, or of the slums, from learning any culture but that of their own groups. (cited in University of Chicago, 2003)

Davis and Havighurst challenged the conventional wisdom of their day that claimed that social inequalities resulted from racial biological inferiority. They



Equality and social justice must be taught—carefully taught.

John I. Goodlad

We Hold Sacred

envisioned a day in which this misconception would be replaced by the knowledge that inequalities in achievement stemmed from environmental factors, such as widespread denial of educational and economic opportunities to people of color.

In the ensuing years, innumerable researchers and thinkers have confirmed Davis's message, including James B. Conant (1961), who documented the shameful differences between the relatively lavish provisions for schooling in the suburbs and the shamefully shabby provisions in the inner cities.

Unfortunately, the biological causation thesis as an explanation of social inequality has had a stubborn longevity. As Stephen J. Gould tells us in *The Mismeasure of Man* (1981), researchers (of a sort) have extended this thesis beyond race. Gould's account of the efforts to assign lower levels of intelligence to women because of their generally smaller craniums is eerily hilarious. He cites the French anthropologist Hervé, who savaged women and black men with one stroke in 1881: "Men of the black races have a brain scarcely heavier than that of white women" (p. 3). As Gould points out, attempts to rank people—whether by brain size or by an IQ test score—have consistently recorded "little more than social prejudice" (p. 28).

History demonstrates that people will find ingenious ways and develop elaborate constructs to create and harden categories of status and privilege among the diverse groups that constitute humankind. And they will produce a litany of justifications to convince the populace that these inequalities are natural and right.

One might argue that a more enlightened era has, in part, arrived. The end to legal racial segregation, improved access to higher education for minorities, and increased economic opportunities have improved individual lives. But the caste system is still entrenched in society; social prejudices and injustices remain.

Our Moral Ecology

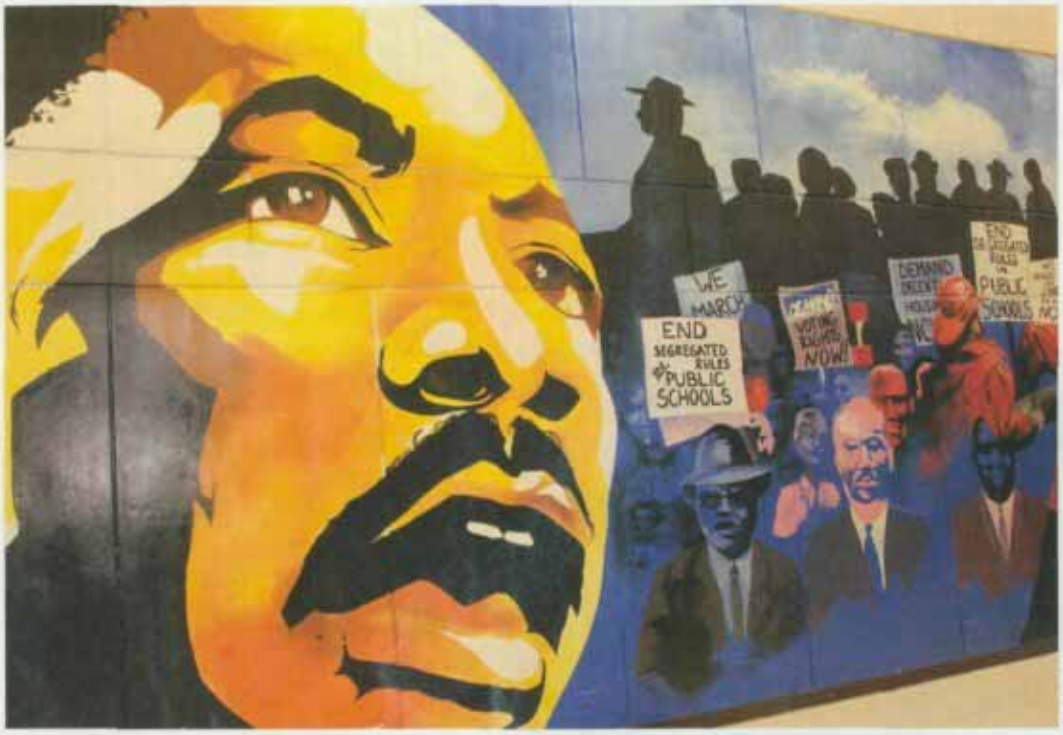
Will humankind ever manage—or want—to do away with social inequality? The apparent inevitability and tenacity of caste as a way of life may make us feel hopeless about trying to eliminate this system. Why try to reform what exists? To quote the 19th century British politician, Lord Thomas Macaulay, "Reform, reform, don't speak to me of reform. We have enough problems already."

Nonetheless, the history of civilization reveals that in every era, some people, somewhere, have envisioned gaining freedom from the caste system. The themes of enlightenment have been argued from both the rational and the divine perspectives. The two perspectives have come together to form a central core of common principles. This evolving center, never static, takes on a kind of cultural sacredness, an abstract moral ecology. It provides, in Seymour Sarason's words, a "sense of interconnections among the individual, the collectivity, and ultimate purpose and meaning of human existence" (1986, p. 899).

In societies seeking to balance the private and public good, we might well consider what we commonly hold sacred. If our moral ecology encompasses equality and social justice, and if we want that moral ecology to guide our society, then equality and social justice must be taught—carefully taught.

Many people assign to our schools the task of nurturing these values in the populace. In its much lauded experiment, universal schooling, the United States set as a major purpose the enculturation of the young—specifically the children of immigrants—into a social and political democracy.

But when we place this responsibility entirely on schools, we forget that between the years of 6 and 18, young people spend approximately 55 percent of their time in activities other than school and sleep. We give little critical thought to the cacophony of teaching that now surrounds our young



throughout the day, and nearly all of which is driven by economic ends rather than by the ideals of education that we espouse in the rhetoric of school and college graduation ceremonies.

Political scientist Benjamin Barber brings our attention sharply to the daunting task that schools undertake when they attempt to develop students' democratic character amid the ubiquitous culture that surrounds young people throughout the day:

> We honor ambition, we reward greed, we celebrate materialism, we worship acquisitiveness, we cherish success, and we commercialize the classroom—and then we bark at the young about the gentle art of the spirit. (1993, p. 42)

The Role of Schools

In spite of the obstacles, it would be the height of folly for our schools not to have as their central mission educating the young in the democratic ideals of humankind, the freedoms and responsibilities of a democratic society, and the civil and civic understandings and dispositions necessary to democratic citizenship. And yet here we are, hardening into place the caste categories linked to test scores, a practice that directly impedes such a mission. When polls ask people what they want of their schools, the people say over and over that the personal and social development of their children is just as important to them as vocational and academic development. As the accumulating body of knowledge about cognition clearly reveals, test scores do not correlate at all with the other attributes that people believe their schools should develop in students.

But not to worry. High test scores will get your offspring into a college or university if the money is available from family resources or scholarships. Forget those who dominate among the low scorers, such as low-income children whose late-in-the-year birthdays kept them out of kindergarten for most of an additional year, during which their families had no resources to send them to preschool. Funding for Head Start did not quite embrace their neighborhoods. And, oh yes, those children in the inner cities who had substitute teachers for every year of their schooling did not reach the upper levels of test scores, either. But let us keep the system, anyway—it offers special rewards for those who succeed and who then join the upper levels of the layers of power.

We need to pay increased attention to the commonalities that bind humankind. Our schools are not lacking in the rhetoric of "respecting diversity" and social studies texts extolling "understanding other people." What *other* people?

We all belong to one species—humankind. There is only one ongoing conversation—the human conversation, consisting of the work, play, parenting, conversing, and imagining in which we all engage and of the beliefs, hopes, and aspirations that we hold. To be sure, within those commonalities there is rich diversity—not only in the rainbow of colors to which the Reverend Jesse Jackson refers, but also in all human characteristics. The diversity in color, language, song, ceremony, religion, games, flora, and fauna that exists among us adds to the miracle of life. Why else do we travel to other parts of the world?

But if we begin with the concept of one humankind and then add the concept of diversity in addressing such democratic essentials as liberty and justice for all, we embark on a slippery slope. Some years ago, a critic attacked the late Ernest Boyer's book, *High School* (1983), and my book, *A Place Called School* (1984), on the grounds that we did not address special education. A specialist in the field defended us by pointing out that we *had* addressed special education—by advocating individualized education for all students.

A few years later, Thomas Lovitt and I were gently taken to task for our advocacy of integrating general and special education (Goodlad & Lovitt, 1993). Critics argued that the road to bringing attention—some of it now required by federal law—to students who require substantial deviations from the norms of schooling had been a rocky one. Many of the hard-won gains could be wiped

out if schools eliminated special education as a separate service, even with the best intentions of providing for the individual differences and education needs of all children. We agreed with their assessment. Our agreement did not change our basic argument for the benefits of bringing general and special education together in classrooms, but it did caution us to emphasize that exceptional provisions are sometimes necessary to provide equal opportunity in education. The same perspective applies to our efforts to provide equal education opportunities to diverse students, no matter what type of diversity we mean.

Beyond Social Caste

The struggle for justice, equity, respect, and appreciation for human diversity has been long and often troubled. It continues to be so. The human race's proclivity for arranging its members in hierarchies of strongly maintained status and privilege is likely to continue as a malaise that can become cancerous.

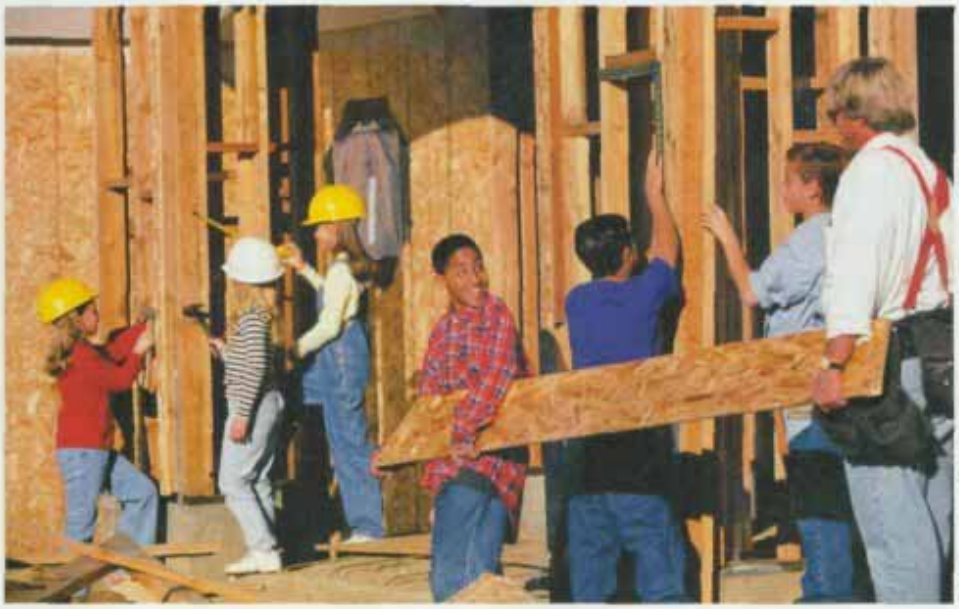
The answer, we know, is education. But education, despite our honoring the concept, is not in itself good. We must intentionally and even passionately inject morality into education (Goodlad, 1999).

Winston Churchill said, "Democracy is the worst form of government except for all those others that have been tried." If we agree, we must do more than teach students only about the political structures of democracy. We must teach students the ideals of democracy and social equality and give our young people opportunities to practice those ideals in their daily lives, both in and out of school.

Unless we work simultaneously as a society to eliminate in our schools and society a caste system harboring and even fostering beliefs and practices that contradict these ideals, our hypocrisy will become transparent. We are all participants in the informal education that goes on outside of schools. The larger community must ensure a democracy that protects and supports the democratic education that needs to go on inside of schools. The clear purpose of schooling, then, becomes attending to all those educational matters that the larger community does not address, especially enculturating the young into satisfying, responsible citizenship in a social and political democracy.

Once formal education inside of schools and informal education outside of schools, working together, make morally grounded democratic behavior routine—as John Dewey said it must become—such principles as justice, equity, and freedom for everyone will need no special advocacy. But when we parcel them out into the tiers of caste privilege, as we often do today, we endanger these precious principles. ■

It would be the height of folly for our schools not to have as their central mission educating the young in the democratic ideals of humankind.



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Projections from a noted futurist and an educator provide direction for schools.

Marvin Cetron and Kimberley Cetron

A Forecast

Education ranks high among the personal and political priorities of most people in the United States. Before considering our goals for education in the coming years, however, we must consider the environment in which schools will operate in the future.

For four decades, Forecasting International has conducted an ongoing study of the forces changing our world. As futurists, we collect all of our data and indicators from unclassified sources. Our computerized data bank, which we continually update, documents more than 3,500 events and trends. We use a variety of techniques, such as trend analysis, trend scanning, scenarios, stages of development, Delphi polls,[1] historic parallels, matrices, and visioning to discern what the future holds in store.

During the past decade, our expectations have proven to be consistently accurate. For instance, we predicted that the economy of the developed world would be more vibrant than most commentators imagined—and so it has been. We forecasted many of the political and social problems that resulted from a changing population. Ninety-five percent of our projections have proven correct.

Futurist research can yield an understanding of societal and economic trends to help schools implement reforms that prepare students more effectively for the changing world. Here we discuss four of the many trends that will have enormous impact on all schools. For each trend, we reflect on some of the education reforms that can help forward-thinking schools respond positively.

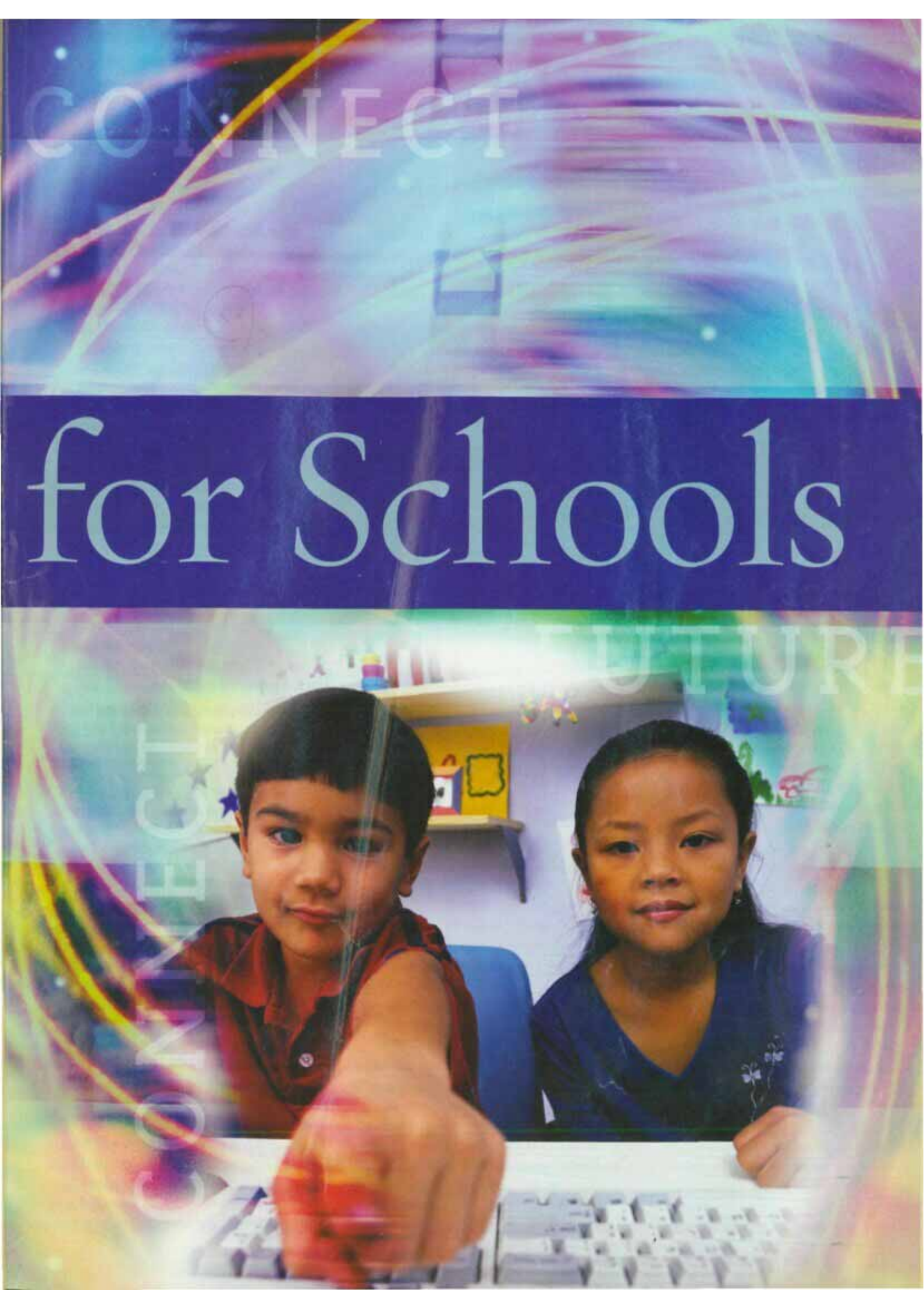
Trend: Funding will become more limited

The economy of the developed world will continue to grow for at least the next three years. Many signs point to the continued recovery of the U.S. economy, including increases in the gross domestic product, consumer spending, real estate sales, and productivity.

For the longer run, however, the greatest economic threat is the projected deficit in the U.S. federal budget: at least $2 trillion, and up to $4 trillion by some estimates, over the next decade (Congressional Budget Office, 2003). Unless recent tax cuts are rescinded, the federal budget deficit will raise interest rates, slow economic growth, and further reduce federal assistance to states and cities. For public schools, these developments could have serious consequences. For example,

- Virtually all federal mandates in the foreseeable future will be unfunded. The underfunding of the No Child Left Behind Act demonstrates that the U.S. federal government will fail to supply sufficient resources to support even highly touted reforms. Additional unfunded mandates will also affect special education, an area in which change will continue to be regulated with insufficient supporting funds.
- Local taxpayers will have to absorb still more of the education budget as contributions from the state and federal levels continue to decline.
- Current school budget cuts are likely to be followed by further reductions. Already, the cash-strapped public education system is finding it increasingly difficult to maintain even its most important programs.
- The recent extension of performance

for Schools



deadlines under the No Child Left Behind program is only the first of many. Improved performance and smaller budgets are mutually exclusive.

■ The pressures on state and local education budgets will make it extremely difficult to build and staff new schools.

How Schools Can Respond

The need to make more creative use of financial resources, combined with the availability of new technologies, makes this an optimal time to get rid of the "edifice complex" and shift as much teaching as possible to the Internet. Granted, different schools have differing available funds and allocate them in widely different ways, making it impossible to generalize. Even so, all schools and school systems can explore and expand on the use of available technology.

For example, students can "attend" some classes over the Internet and gather in a classroom only periodically for social interaction and other functions enhanced by meeting face-to-face.

Technology will transform the future workplace of today's students.

This innovation would dramatically reduce school costs while maintaining high educational performance. Most building budgets would be better invested in computer networks and hardware for students who do not already have their own computers than in new basal texts, which are often outdated by the time they are published.

The best schools are wired learning centers that can tap into information anywhere in the world. Teachers are becoming mentors and catalysts whose job is not to lecture but rather to help students learn to collect, evaluate, analyze, and synthesize information. For computer-literate learners, much of this can be accomplished online.

Some schools (for example, in Fairfax County, Virginia) are piloting online summer school programs. In Blacksburg, Virginia, the public schools and Virginia Polytechnic Institute have been fully wired for almost 15 years, thereby enabling the town and university to integrate programs to make education and training available online (Cetron, Soriano, & Gayle, 1985).

The state of Maine has shown its commitment to educating students for the 21st century by issuing all middle school students laptop computers. The $37.2 million program, begun in 2002, has expanded this year in spite of the state's $1 billion budget deficit. As Seymour Papert, an expert in artificial intelligence, commented,

> As long as pencil and paper was the only medium, schooling was a static thing. . . . By giving all kids access to a computer, Maine is creating conditions for the development of a radically different way of thinking about education. (cited in Kleiner, 2003, p. 66)

Measures as simple as supporting classrooms from Web sites maintained by individual instructors or providing students with an online forum for writing revision provide excellent starting points for schools just beginning to explore the uses of technology for delivering instruction in the 21st century.

Trend: The student population will grow and continue to become more diverse

Population projections show that the number of school-age children will be significantly higher than planners anticipated for much of the next two decades (U.S. Census Bureau, 2002). Between 1997 and 2007, at least 6,000 new

schools and 190,000 new teachers will be needed in the United States (Jackson, 2002). This number could grow unexpectedly, just as the population is doing.

At the same time, the demographic makeup of the population is changing. Current minority groups will account for an ever larger part of the U.S. population.

Ten years from now, many school districts will have enrollments that are dramatically different from what they are now, with the largest growth occurring in the Hispanic population. Consider the following projections (Olson, 2000):

- Today, about 65 percent of school-age children are non-Hispanic whites. That figure is expected to drop to 56 percent by 2020 and to under 50 percent by 2040.
- Between 1999 and 2010, Hispanics will account for 43 percent of U.S. population growth. This Hispanic school-age population is predicted to increase by approximately 60 percent in the next 20 years. By 2025, nearly one in four school-age children will be Hispanic.
- The school-age Asian and Pacific Islander population is expected to increase from 4 percent in 2000 to 6.6 percent in 2025. African American and Native American school-age populations are predicted to remain relatively stable.

The growing racial and ethnic minority population will present continuing challenges for education. Schools will need to find new strategies to overcome longstanding achievement gaps and educate all students, including those in groups that have traditionally been considered difficult to educate. A continuing shortage of qualified teachers—particularly in special education and teaching English to speakers of other languages—will complicate this challenge.

How Schools Can Respond

To meet this challenge, educators need to focus on finding creative strategies to serve the learning needs of all students. Their task may be even more difficult because of the recent movement to reduce or eliminate tracking. Simply

A Profile of Generation X and Generation Dot-Com

Members of Generation X (roughly, the 30-something cohort) and of Generation Dot-Com (now in their 20s) have many characteristics that will shape the future.

- The under-20 cohort is remaining in school longer and taking longer to enter the work force than older generations did (Jackson, 2002).
- Generation X might be more aptly named "Generation E," for entrepreneurial. Throughout the world, they are starting new businesses at an unprecedented rate.
- The Dot-Com generation is proving to be even more business-oriented. Twice as many say they would rather own a business than be a top executive, and five times more would rather own a business than hold a key position in politics or government (Jackson, 2002).
- Many are economically conservative. On average, those who can are beginning to save much earlier in life than their parents did in order to protect themselves against unexpected adversity. Dot-Coms are already buying their own homes to ensure their future security (Jackson, 2002).
- They get information very quickly from the Internet, CNN, and *USA Today*. Time is important. They are not concerned with in-depth reporting. In his groundbreaking *Gutenberg Elegies*, Sven Birkerts (1995) identifies them as information gatherers who skim texts for facts rather than dwell on the soft data found in context or literary text. This preference represents both a cultural and paradigmatic shift.
- Employers will adjust their policies and practices to the values of these new and different generations. Managers will find new ways to motivate and reward new-generation employees and to earn their respect. Generation X and Generation Dot-Com thrive on challenge, opportunity, and training—whatever will best prepare them for their next career move.
- Generations X and Dot-Com are well equipped for work in an increasingly high-tech world, but many have little interest in their employers' needs and want to do things their own way.
- Generation Xers watched their parents remain loyal to their employers, only to be downsized out of work. As a result, this generation has little corporate loyalty. Many will quit their job at even the hint of a better position. For many Generation Xers, work is only a means to an end: money, fun, and leisure.
- Adolescents and young adults have a limited historical perspective. Throughout the 1990s—effectively, their entire adult lives—Generations X and Dot-Com knew only good economic times, and the current economic downturn seems to them a confusing aberration rather than a predictable part of the business cycle. Most expect to see hardship on a national level, but they both want and expect prosperity for themselves.
- Members of Generations X and Dot-Com tend to share values with other members of their generation throughout the world. Generation X and Dot-Com entrepreneurs are largely responsible for the current economic growth in China, where they are becoming a major force in the Communist party. In India, the younger generations dress and think like their U.S. counterparts, not like their parents.

creating heterogeneous learning groups does not address the needs of individual learners. "One for all, all for one" learning and "teaching to the middle" create the risk that the fastest learners will be perpetually bored, while the slowest will continue to struggle. When teachers deliver instruction to one group, the other is inevitably lost.

Individualizing instruction is more sophisticated, more effective, and, with proper training and implementation, no more labor-intensive. All students learn the same material, but students arrive at the same goal by taking different routes. Student-centered instruction rooted in student choice and collaborative learning provides intrinsic motivation to learn and prepares students for the real-world application of their learning.

Elementary education allows for individualized instruction in ways that higher education rarely does. All content areas are taught by one teacher—ideally, in an interdisciplinary fashion—and the school day can be scheduled to best meet individual students' needs. With regular diagnostic assessments of student skills, teachers can provide instruction in fluid ability groups that they can adjust frequently during the grading period, semester, or school year. For example, teachers can individualize spelling instruction by noting student errors and then placing students in small groups on the basis of the specific needs that students' errors indicate.

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Teachers can individualize mathematics instruction on the basis of aptitudes and learning styles. Students who work sequentially, employ linear reasoning, or grasp concepts in terms of numerals and symbols (through pencil-and-paper tasks) can work separately from those who employ more abstract, nonlinear, and kinesthetic reasoning and who tend to solve problems through concrete operations (manipulatives). Education centers in the classroom can provide both enrichment and remediation, with portions of the school day allocated to self-directed exploration of curricular content.

The Rapidly Changing U.S. Population

Despite a low birth rate (13.9 per 1,000 persons in 2002, down 17 percent since 1990), by June 2003 there were more than 291 million people in the United States, 8 million more than forecast just a few years earlier. The difference from the forecast was caused by immigration—primarily of Latinos, who now constitute the largest minority in the United States: 38.8 million as of mid-2002 and growing by nearly 10 percent every two years.

Overall, the elderly are the fastest-growing segment of the population. In 2001, 35 million people in the United States were age 65 or older. By 2020, that number will leap to at least 53.7 million. The number of retirement-age U.S. residents in the future is likely to be even larger than anticipated because advances in geriatric medicine will add years to life expectancy, even for those now in middle age.

According to most forecasts, there will soon be only two working-age people in the United States to support each Social Security recipient, down from nearly seven when Social Security was established.

Source: U.S. Census Bureau. (2002).

At the secondary level, the International Baccalaureate (IB) program does an exemplary job of offering students a voice in their own learning by embedding choice, collaboration, and performance assessment into each stage of a student's development. IB students spend 9th and 10th grade learning to become their own advocates, developing an appetite for intellectual inquiry and exchange and exploring the academic world in an interdisciplinary and global capacity. Students in 10th and 11th grade explore epistemology, ethics, issues in current affairs, and academic topics in ways that are alternately self-reflective and outward-focused while building knowledge and skills liberal enough to provide context and specific enough to provide ownership in their learning.

Educators at every age level can design alternative assessments (to objective or subjective testing instruments) that allow students to choose how to display their knowledge and skills in a highly personalized manner. Teachers often remark that they gain more insight into student learning from projects such as these than from traditional papers and tests. The best alternative assessments allow students to choose from among a variety of intelligences. Gardner's theory of multiple intelligences (2000) identifies nine ways in which we all make meaning and communicate our understanding to others: interpersonal, intrapersonal, linguistic, logical-mathematical, bodily-kinesthetic, musical, spatial, existentialist, and naturalist. Students can combine approaches to exhibit their evolving understanding of a particular subject.

Many school districts will have enrollments that are dramatically different from what they are now.

Individualizing education also means providing the full range of resources to every student who needs the help of high-intensity summer classes, tutoring, remedial classes after hours, and English as a second language. This ideal has yet to be realized, but it remains an attainable goal during the early decades of the 21st century (Cetron & Cetron, 1999).

Trend: Technology will continue to transform the workplace

Advances in technology, especially computers and the Internet, are speeding up the pace of change. Half of the cutting-edge science and technology content that college students learn in their freshman year will be obsolete, revised, or taken for granted by their senior year. Roughly 80 percent of all scientists, engineers, and physicians who have ever lived are alive today—and are actively trading ideas in real time on the Internet (Cetron & Davies, 2003).

Technology will transform the future workplace of today's students. For a good career in almost any field, computer competence is becoming mandatory. Even entry-level jobs and formerly unskilled positions require a growing level of education.

In all fields, new technologies are replacing what was recently cutting-edge at an ever faster rate. New technologies often require more education and training. They also provide endless new opportunities to create new businesses and jobs. Corporations already recognize this need and have begun to provide time and compensation for training, considering it an investment rather than an expense.

How Schools Can Respond

The demand for computer and Internet training—especially at the middle school and high school levels—can only grow. Teachers who are still uncomfortable with computers and related technology can no longer do their jobs effectively. Even those teachers with a higher comfort level need ongoing training to upgrade their skills as technology rapidly advances. Schools need to provide time and money to enable faculties to upgrade their skills and knowledge. They should consider this training as an investment that helps recruit and retain the best educators.

Fortunately, the current generation of beginning teachers can cope with computers and related hardware with an ease and comfort level that their veteran colleagues can only envy. Their

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familiarity with technology should help reduce the problems of high-tech education in the years to come.

The transformation of the workplace also calls for a new kind of high-tech vocational education that can prepare tomorrow's medical technicians, computer programmers, and other technology specialists. Unfortunately, only about 30 percent of today's high school graduates go on to college (U.S. Census Bureau, 2002). Among the young people who enter the work force directly after high school graduation or who drop out before graduating, few have the skills to earn a good living in a high-tech economy.

The Fairfax County, Virginia, Academy program is a model for schools that wish to graduate students who are qualified to enter or apprentice in the specialized work force and maintain the infrastructure that business and service industries require. Through this program, students attend academic classes for part of the school day and travel to other county schools that specialize in a broad range of professional fields (computer science, communications, auto technology) to gain professional skills and often certification (Cetron & Cetron, 1999).

Unfortunately, in any shape or form, high-tech vocational education is another crucial educational resource that today's draconian budget cuts block or endanger.

Schools may need to form partnerships with industry leaders to establish high-tech vocational education programs at the local level—programs that would train students to meet these companies' professional standards for computer technicians and software specialists.

Trend: Tomorrow's citizens will need and expect to engage in lifelong learning

A career used to last for life. Once a carpenter, always a carpenter; once a chemist, always a chemist. Today, new technology could redefine or replace almost anyone's job—even the industry in which they work. Today's students will pursue an average of five entirely different occupations during their working lives. Both management and employees must get used to the idea of lifelong learning, which is becoming a significant part of working life at all levels.

Automation, international competition, and other fundamental changes in the economy are destroying the few remaining well-paid jobs that do not require advanced training. The only way to survive in such an economy is through continual retraining. Public schools will need to provide some of this training after normal school hours. State, local, and private agencies are also likely to play a greater role in training by offering more internships, apprenticeships, pre-employment training, and adult education.

The demand for lifelong learning marks a sea change in U.S. education.

Lifelong learning is also becoming an expectation outside the workplace. Adult education is expanding—not only in response to adults' need to train for new careers, but also because healthy, energetic people need to keep active during retirement. And as current minority and low-income households buy computers and log on to the Internet, groups now disadvantaged will increasingly be able to engage in online education.

How Schools Can Respond

Ironically, as the need for lifelong learning, critical thinking skills, and creative problem solving in society increases, schools may be facing a new breed of student, born of a culture in which people begin building a résumé and working on college qualifications as early as 6th grade. In *Doing School*, Denise Clark Pope (2001) writes that these students often lack the intrinsic motivation to learn, bearing instead the enormous burden of part-time jobs, extracurricular activities, community service, and maintaining competitive test scores and grade point averages. High-stakes testing and similar offshoots of the standards and accountability movement add to the pressure, promoting rote learning of discrete pieces of knowledge instead of student engagement, initiative, and creativity.

To become lifelong learners, today's students will need educators who can skillfully weave choice and relevance into the curriculum so that students experience both pleasure and academic success during their schooling. To support this goal, policymakers should

- Encourage teachers to adopt lifelong learning, both in their subject specialties and in pedagogical practice. Science and technology in particular are experiencing rapid change, and teachers who rely on textbooks for their curriculum guarantee that their lessons will be obsolete.
- Envision schools, libraries, and community centers evolving into general-purpose facilities with Internet access, where students can gather to study online and adults can telecommute to remote jobs, reducing rush-hour traffic. This multifaceted approach would constitute a very efficient use of school facilities.
- Encourage high school seniors to engage in preprofessional, career preparation experiences (such as independent studies, international exchanges, apprenticeships, internships, or certification programs) rather than allowing them to waste valuable time between their acceptance into college and the start of their freshman year.

The demand for lifelong learning marks a sea change in U.S. education. Learning to learn must become the underpinning of all curriculums and must be a requirement of both students

and their instructors in all content areas and grade levels.

This trend will also broaden the function of school systems, creating still more demands on their time and resources. Teens uncertain about going to college will train to earn a living. Adults will spend their evenings in class, preparing for their next careers. Teachers will study during nights and weekends to keep their subject knowledge and pedagogy current. Continual learning will become a way of life for all who wish to succeed. For 21st century schools, it will become a new mandate.

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Cautious Optimism

These trends and other changes occurring in society and the work force place new demands on U.S. public schools at a time when budget cuts are making it difficult to meet today's basic needs. More challenging years lie ahead.

Yet we are cautiously optimistic about the future of education. In any poll, U.S. voters—the people who must pay for our schools—consistently cite education as the highest priority. Today's experiments in cut-rate, free-market education will not survive any longer than it takes to recognize their failure. If technology brings new challenges for our schools, it also provides a means to make schools more effective.

Ten years from now, teachers and administrators may look back on this decade as one of the most trying periods that U.S. schools have ever experienced. But if educators implement the reforms that the future demands, they will also remember this period as the time when they learned to give all their students an education suited to the modern, high-tech world. ■

[1]In a Delphi poll, experts complete a questionnaire designed to elicit their views. The answers from this survey are circulated among the participants and the poll is reported. In the second round of questioning, participants reconsider their original views in light of the opinions of their peers. This typically results in a narrower range of replies and a more solid consensus. The Delphi technique has been used in several thousand studies and generally produces analyses and forecasts that are among the most reliable available.

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The Importance of Multicultural Education

It's not just an add-on or an afterthought. Curriculums infused with multicultural education boost academic success and prepare students for roles as productive citizens.

Geneva Gay

Multiculturalism in U.S. schools and society is taking on new dimensions of complexity and practicality as demographics, social conditions, and political circumstances change. Domestic diversity and unprecedented immigration have created a vibrant mixture of cultural, ethnic, linguistic, and experiential plurality.

Effectively managing such diversity in U.S. society and schools is at once a very old and a very new challenge. Benjamin Barber (1992) eloquently makes the point that

> America has always been a tale of peoples trying to be a People, a tale of diversity and plurality in search of unity. Cleavages among [diverse groups] . . . have irked and divided Americans from the start, making unity a civic imperative as well as an elusive challenge. (p. 41)

Accomplishing this end is becoming increasingly important as the 21st century unfolds. People coming from Asia, the Middle East, Latin America, Eastern Europe, and Africa differ greatly from earlier generations of immigrants who came primarily from western and northern Europe. These unfamiliar groups, cultures, traditions, and languages can produce anxieties, hostilities, prejudices, and racist behaviors among those who do not understand the newcomers or who perceive them as threats to their safety and security. These issues have profound implications for developing instructional programs and practices at all levels of education that respond positively and constructively to diversity.

A hundred years ago, W. E. B. Du Bois (1994) proposed that the problem of the 20th century was conflict and controversy among racial groups, particularly between African and European Americans. He concluded that

> Between these two worlds [black and white], despite much physical contact and daily intermingling, there is almost no community of intellectual life or point of transference where the thoughts and feelings of one race can come into direct contact and sympathy with the thoughts and feelings of the other.

Although much has changed since Du Bois's declarations, too much has not changed nearly enough. Of course, the color line has become more complex and diverse, and legal barriers against racial intermingling have been dismantled. People from different ethnic, racial, and cultural groups live in close physical proximity. But coexistence does not mean that people create genuine communities in which they know, relate to, and care deeply about one another. The lack of a genuine community of diversity is particularly evident in school curriculums that still do not regularly and systematically include important information and deep study about a wide range of diverse ethnic groups. As disparities in educational opportunities and outcomes among ethnic groups continue to grow, the resulting achievement gap has reached crisis proportions.

Multicultural education is integral to improving the academic success of students of color and preparing all youths for democratic citizenship in a pluralistic society. Students need to understand how multicultural issues shape the social, political, economic, and cultural fabric of the United States as well as how such issues fundamentally influence their personal lives.

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Conceptions of Multicultural Education

Even though some theorists (Banks & Banks, 2002) have argued that multicultural education is a necessary ingredient of quality education, in actual practice, educators most often perceive it either as an addendum prompted by some crisis or as a luxury. Multicultural education has not yet become a central part of the curriculum regularly offered to all students; instead, educators have relegated it primarily to social studies, language arts, and the fine arts and have generally targeted instruction for students of color.

These attitudes distort multicultural education and make it susceptible to sporadic and superficial implementation, if any. Textbooks provide a compelling illustration of such an attitude: The little multicultural content that they offer is often presented in sidebars and special-events sections (Loewen, 1995).

> Classroom teachers and educators must provide students from all ethnic groups with the education they deserve.

Another obstacle to implementing multicultural education lies with teachers themselves. Many are unconvinced of its worth or its value in developing academic skills and building a unified national community. Even those teachers who are more accepting of multicultural education are nevertheless skeptical about the feasibility of its implementation. "I would do it if I could," they say, "but I don't know how." "Preparing students to meet standards takes up all my time," others point out. "School curriculums are already overburdened. What do I take out to make room for multicultural education?"

A fallacy underlies these conceptions and the instructional behaviors that they generate: the perception of multicultural education as separate content that educators must append to existing curriculums as separate lessons, units, or courses. Quite the contrary is true. Multicultural education is more than content; it includes policy, learning climate, instructional delivery, leadership, and evaluation (see Banks, 1994; Bennett, 2003; Grant & Gomez, 2000). In its comprehensive form, it must be an integral part of everything that happens in the education enterprise, whether it is assessing the academic competencies of students or teaching math, reading, writing, science, social studies, or computer science. Making explicit connections between multicultural education and subject- and skill-based curriculum and instruction is imperative.

It is not pragmatic for K–12 educators to think of multicultural education as a discrete entity, separated from the commonly accepted components of teaching and learning. These conceptions may be fine for higher education, where specialization is the rule. But in K–12 schools, where the education process focuses on teaching eclectic bodies of knowledge and skills, teachers need to use multicultural education to promote such highly valued outcomes

as human development, education equality, academic excellence, and democratic citizenship (see Banks & Banks, 2001; Nieto, 2000).

To translate these theoretical conceptions into practice, educators must systematically weave multicultural education into the central core of curriculum, instruction, school leadership, policymaking, counseling, classroom climate, and performance assessment. Teachers should use multicultural content, perspectives, and experiences to teach reading, math, science, and social studies.

For example, teachers could demonstrate mathematical concepts, such as less than/greater than, percentages, ratios, and probabilities using ethnic demographics. Younger children could consider the ethnic and racial distributions in their own classrooms, discussing which group's representation is greater than, less than, or equal to another's. Older students could collect statistics about ethnic distributions on a larger scale and use them to make more sophisticated calculations, such as converting numbers to percentages and displaying ethnic demographics on graphs.

Students need to apply such major academic skills as data analysis, problem solving, comprehension, inquiry, and effective communication as they study multicultural issues and events. For instance, students should not simply memorize facts about major events involving ethnic groups, such as civil rights movements, social justice efforts, and cultural accomplishments. Instead, educators should teach students how to think critically and analytically about these events, propose alternative solutions to social problems, and demonstrate understanding through such forms of communication as poetry, personal correspondence, debate, editorials, and photo essays.

Irvine and Armento (2001) provide specific examples for incorporating multicultural education into planning language arts, math, science, and social studies lessons for elementary and middle school students and connecting these lessons to general curriculum standards. One set of lessons demonstrates how to use Navajo rugs to explain the geometric concepts of perimeter and area and to teach students how to calculate the areas of squares, rectangles, triangles, and parallelograms.

These suggestions indicate that teachers need to use systematic decision-making approaches to accomplish multicultural curriculum integration. In practice, this means developing intentional and orderly processes for including multicultural content. The decision-making process might involve the following steps:

- Creating learning goals and objectives that incorporate multicultural aspects, such as "Developing students' ability to write persuasively about social justice concerns."
- Using a frequency matrix to ensure that the teacher includes a wide variety of ethnic groups in a wide variety of ways in curriculum materials and instructional activities.
- Introducing different ethnic groups and their contributions on a rotating basis.
- Including several examples from different ethnic experiences to explain subject matter concepts, facts, and skills.
- Showing how multicultural content, goals, and activities intersect with subject-specific curricular standards.

Virtually all aspects of multicultural education are interdisciplinary. As such, they cannot be adequately understood through a single discipline. For example, teaching students about the causes, expressions, and consequences of racism and how to combat racism requires the application of information and techniques from such disciplines as history, economics, sociology, psychology, mathematics, literature, science, art, politics, music, and health care. Theoretical scholarship already affirms this interdisciplinary need; now, teachers need to model good curricular and instructional practice in elementary and secondary classrooms. Putting this principle into practice will elevate multicultural education from impulse, disciplinary isolation, and simplistic and haphazard guesswork to a level of significance, complexity, and connectedness across disciplines.

Multiculturalism and Curriculum Development

How can teachers establish linkages between multicultural education and the disciplines and subject matter content taught in schools? One approach is to filter multicultural education through two categories of curriculum development: *reality/representation* and *relevance*.

Reality/Representation

A persistent concern of curriculum development in all subjects is helping students understand the *realities* of the social condition and how they came to be as well as adequately representing those realities. Historically, curriculum designers have been more exclusive than inclusive of the wide range of ethnic and cultural diversity that exists within society. In the haste to promote harmony and avoid controversy and conflict, they gloss over social problems and the realities of ethnic and racial identities, romanticize racial relations, and ignore the challenges of poverty and urban living in favor of middle-class and suburban experiences. The reality is distorted and the representations incomplete (Loewen, 1995).

An inescapable reality is that diverse ethnic, racial, and cultural groups and individuals have made contributions to every area of human endeavor and to all aspects of U.S. history, life, and culture. When students study food resources in the United States, for example, they often learn about production and distribution by large-scale agribusiness and processing corporations. The curriculum virtually overlooks the contributions of the many ethnically diverse people involved in planting and harvesting vegetables and fruits (with the Mexican and Mexican American farm labor unionization movement a possible exception). School curriculums that incorporate comprehensive multicultural education do not perpetuate these exclusions. Instead, they teach students the reality—how large corporations and the food industry are directly connected to the migrant workers who harvest vegetables and pick fruits. If we are going to tell the true story of the United States, multicultural education must be a central feature of telling it.

School curriculums need to reverse these trends by also including equitable *representations* of diversity. For example, the study of American literature, art, and music should include contributions of males and females from different ethnic groups in all genres and in different expressive styles. Thus, the study of jazz will examine various forms and techniques produced not just by African Americans but also by Asian, European, and Latino Americans.

Moreover, educators should represent ethnically diverse individuals and groups in all strata of human accomplishment instead of typecasting particular groups as dependent and helpless victims who make limited contributions of significance. Even under the most oppressive conditions, diverse groups in the United States have been creative, activist, and productive on broad scales. The way in which Japanese Americans handled their internment during World War II provides an excellent example. Although schools must not overlook or minimize the atrocities this group endured, students should also learn how interned Japanese Americans led dignified lives under the most undignified circumstances and elevated their humanity above the circumstances. The curriculum should include both issues.

Relevance

Many ethnically diverse students do not find schooling exciting or inviting; they often feel unwelcome, insignificant, and alienated. Too much of what is taught has no immediate value to these students. It does not reflect who they are. Yet most educators will agree that learning is more interesting and easier to accomplish when it has personal meaning for students.

Students from different ethnic groups are more likely to be interested and engaged in learning situations that occur in familiar and friendly frameworks than in those occurring in strange and hostile ones. A key factor in establishing educational relevance for these students is cultural similarity and responsiveness (see Bruner, 1996; Hollins, 1996; Wlodkowski & Ginsberg, 1995). For example, immigrant Vietnamese, Jamaican, and Mexican students who were members of majority populations in their home countries initially may have difficulty understanding what it means to be members of minority groups in the United States. Students who come from education environments that encourage active participatory learning will not be intellectually stimulated by passive instruction that involves lecturing and completing worksheets. Many students of color are bombarded with irrelevant learning experiences, which dampen their academic interest, engagement, and achievement. Multicultural education mediates these situations by teaching content about the cultures and contributions of many ethnic groups and by using a variety of teaching techniques that are culturally responsive to different ethnic learning styles.

> Multicultural education is much more than a few lessons about ethnically diverse individuals and events or a component that operates on the periphery of the education enterprise.

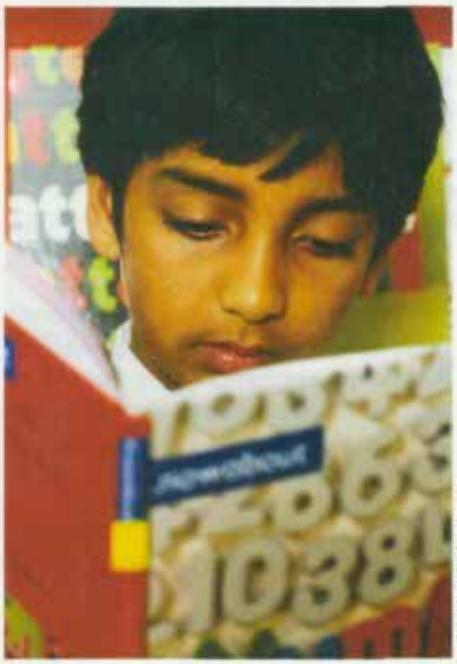
Using a variety of strategies may seem a tall order in a classroom that includes students from many different ethnic groups. Research indicates, however, that several ethnic groups share some learning style attributes (Shade, 1989). Teachers need to understand the distinguishing characteristics of different

learning styles and use the instructional techniques best suited to each style. In this scenario, teachers would provide alternative teaching techniques for clusters of students instead of for individual students. In any given lesson, the teacher might offer three or four ways for students to learn, helping to equalize learning advantages and disadvantages among the different ethnic groups in the classroom.

Scholars are producing powerful descriptions of culturally relevant teaching for multiethnic students and its effects on achievement. Lipka and Mohatt (1998) describe how a group of teachers, working closely with Native Alaskan (Yup'ik) elders, made school structure, climate, curriculum, and instruction more reflective of and meaningful to students from the community. For 10 years, the teachers translated, adapted, and embedded Yup'ik cultural knowledge in math, literacy, and science curriculums. The elders served as resources and quality-control monitors of traditional knowledge, and they provided the inspiration and moral strength for the teachers to persist in their efforts to center the schooling of Yup'ik students around the students' own cultural orientations. In math, for instance, the teachers now habitually make connections among the Yup'ik numeration system, body measurements, simple and complex computations, geometry, pattern designs, and tessellations.

Similar attributes apply to the work of such scholars as Moses and Cobb (2001), Lee (1993), and Boykin and Bailey (2000), who are studying the effects of culturally relevant curriculum and instruction on the school performance of African American students.

Moses and his colleagues are making higher-order math knowledge accessible to African American middle school students by teaching this material through the students' own cultural orientations and experiences. To teach algebra, they emphasize the experiences and familiar environments of urban and rural low-income students,



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Multicultural education may be the solution to problems that currently appear insolvable.

many of whom are at high risk for academic failure. A key feature of their approach is making students conscious of how algebraic principles and formulas operate in their daily lives and getting students to understand how to explain these connections in nonalgebraic language before converting this knowledge into the technical notations and calculations of algebra. Students previously considered by some teachers as incapable of learning algebra are performing at high levels—better, in fact, than many of their advantaged peers.

Evidence increasingly indicates that multicultural education makes schooling more relevant and effective for Latino American, Native American, Asian American, and Native Hawaiian students as well (see McCarty, 2002; Moll, Amanti, Neff, & Gonzalez, 1992; Park, Goodwin, & Lee, 2001; Tharp & Gallimore, 1988). Students perform more successfully on all levels when there is greater congruence between their cultural backgrounds and such school experiences as task interest, effort, academic achievement, and feelings of personal efficacy or social accountability.

As the challenge to better educate underachieving students intensifies and diversity among student populations expands, the need for multicultural education grows exponentially. Multicultural education may be the solution to problems that currently appear insolvable: closing the achievement gap; genuinely not leaving any children behind academically; revitalizing faith and trust in the promises of democracy, equality, and justice; building education systems that reflect the diverse cultural, ethnic, racial, and social contributions that forge society; and providing better opportunities for all students.

Multicultural education is crucial. Classroom teachers and educators must answer its clarion call to provide students from all ethnic groups with the education they deserve. ■

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Out With Textbooks, In With Learning

It's time to rid classrooms of superficial and unreadable textbooks and start providing a balanced diet of good reading.

Harvey Daniels and Steven Zemelman

While visiting a Chicago high school recently, we looked through the stack of textbooks assigned to all of the juniors. Man, were they massive!

British Literature—1,152 pages
Biology—1,164 pages
French—624 pages
U.S. History—982 pages
Advanced Algebra/Trigonometry—790 pages

Each book weighed enough to break your foot if you dropped it. Really. According to the TIMSS international comparison of mathematics and science education, students in the United States have the heaviest and thickest textbooks in the world (Budiansky, 2001). And the American Academy of Orthopedic Surgeons (2001) has recently warned about the rising incidence of spinal injuries among young people toting an ever heavier burden of textbooks in their backpacks.

U.S. textbooks are jammed with facts, lists, charts, information, photographs, places, dates, formulas, problems, sidebars, study questions, and still more study questions. And much of it is carefully aligned with hundreds of local, state, or national standards. Is that why textbooks hold a seemingly unassailable place in our classroom practice—and in school budgets? What exactly are the benefits of these ubiquitous and potentially injurious objects? What are students risking their backs for?

We are sorry to kick education publishers in their already well-bruised shins, but most textbooks are unreadable, superficial, chaotic, authoritarian, and inaccurate. And worse, every minute a student spends with her nose in a 1,000-page textbook is another minute lost from real reading, the kind of reading that thoughtful, curious people do outside of school, that can kindle a lifelong reading habit, and that nurtures genuine curiosity about math, science, history, literature, or art. In short, smart grown-ups don't generally read school textbooks. Instead, they read newspapers, magazines, and other nonfiction materials, and often talk about them with their friends, coworkers, and families. We think school should imitate life in this very important way.

Unreadable

Ever wonder why *Algebra II* has never topped the *New York Times* best-seller list? Or why no one ever buys a chemistry textbook and stays up all night reading it straight through? ("I just couldn't put it down!") Maybe that's because textbooks are reference books, not novels or nonfiction books. Most school textbooks belong in the reference category, along with encyclopedias, dictionaries, and thesauruses. They don't attempt to provide the kind of narrative coherence you get from a *Time* magazine article or a good popular biography or exposé. Their primary job is not to be comprehensible or even to pay much attention to the reader's morale. Instead, textbooks are designed mainly to store huge amounts of information.

Most school textbooks belong in the reference category, along with encyclopedias, dictionaries, and thesauruses.

In the field of reading research, school textbooks exemplify "inconsiderate" or "unfriendly" text. They are storage systems for information, giant compendiums of data. They are intentionally "content-overloaded" with facts, dates, formulas, and taxonomies. They introduce vocabulary and concepts at a blinding rate. Highly structured and orderly, they pack information into carefully labeled slots as densely as possible. Of course, being highly organized does not necessarily make a textbook any more comprehensible than the typical "well-organized" VCR

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programming manual.

There is nothing wrong with reference books. Personally, we love them, we use them, we cannot live without them. But in the world at large, people use reference books when they have an immediate need for a certain chunk of information—what the U.S. Constitution's Third Amendment really says, how the colon works, or how to compute the surface area of a sphere. In school, we pretend that textbooks aren't reference books at all, and we expect students to plow right through, cover to cover, remembering and passing quizzes on the stacks of information stored therein.

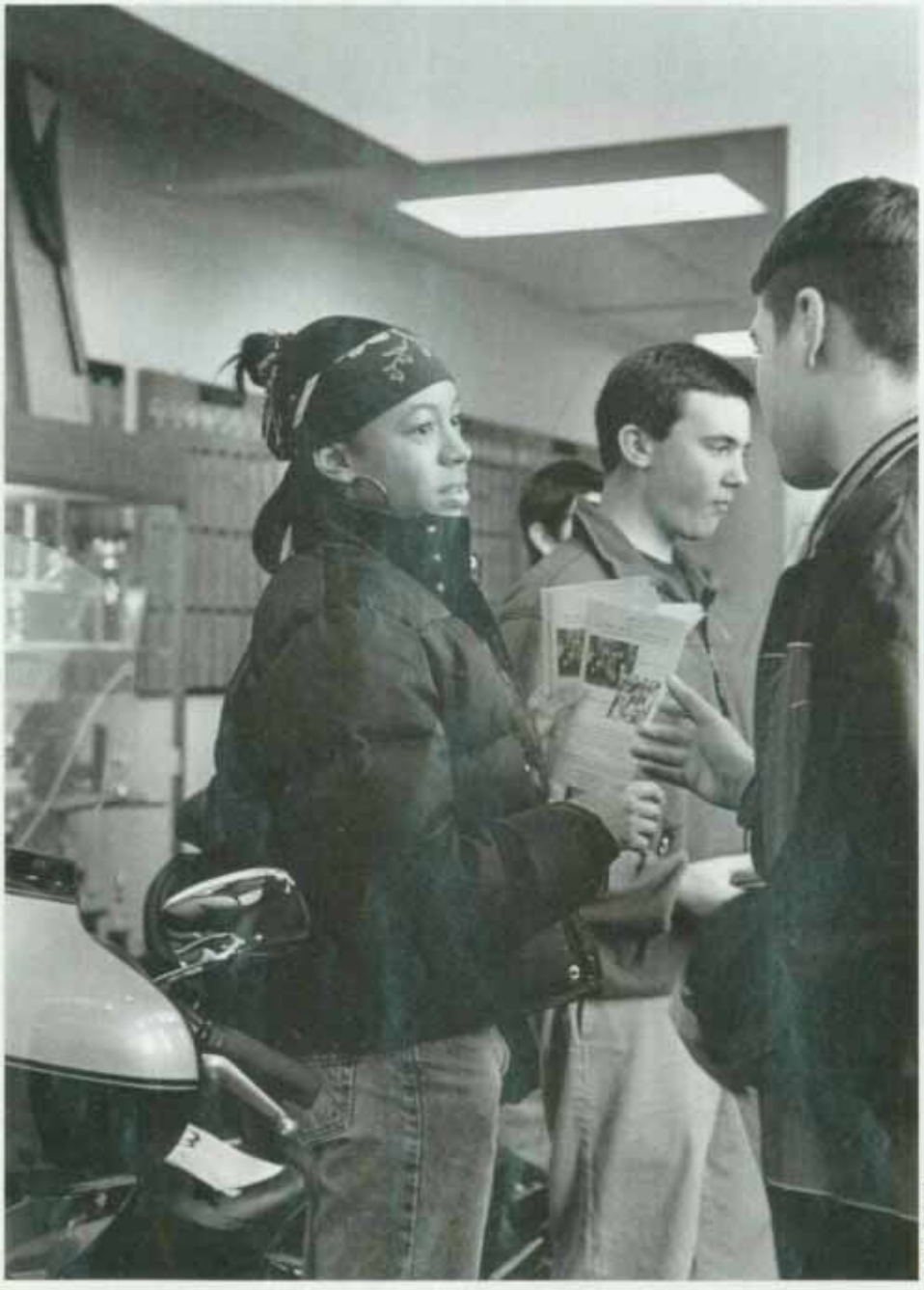
Superficial

It may seem odd to accuse 1,000-page textbooks of being superficial. They certainly seem complete, and they do provide an avalanche of data, a staggering amount of detail. The trouble is that these textbooks contain too much material. According to the American Association for the Advancement of Science (AAAS), which has taken the lead in evaluating educational materials,

> Today's textbooks cover too many topics without developing any of them well. Central concepts are not covered in enough depth to give students a chance to truly understand them. While many textbooks present the key ideas described in national and state standards documents, few books help students learn the ideas or help teachers teach them well. (Roseman, Kulm, & Shuttleworth, 2001, p. 56)

In the drive to include everything, the biggest ideas fade into the background, never get successfully communicated, or simply don't stick with students.

The problem with excessive content coverage, and its resulting superficiality, has been exacerbated by state legislatures and politicians seeking "tougher standards." And "tougher" often just means adding even more material to an



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Teenagers should not be "getting ready" to be lifelong learners—they should be acting like them right now.

already overstuffed curriculum. But what are textbook publishers supposed to do when the states mandate "covering" every possible topic in a field, sanctifying what Alfie Kohn (1999) calls the "bunch o' facts" curriculum? The safe move is to cram the book with every possible factoid—even though everyone knows that the students won't remember a word of it beyond the statewide test.

Chaotic

In recent years, publishers have worked hard to make textbooks more visually interesting and engaging. They are aware that real-world nonfiction has changed dramatically in recent years—think of the evolution of the weekly news magazines from endless blocks of gray to today's lively columns, graphics, and features. Publishers of school textbooks also know that they must compete with the hyperworld of video games and the Internet, where students live much of their lives. After all, how are you going to keep their noses in the chemistry textbook after they've played "Grand Theft Auto"?

But these postmodern designs backfire. Instead of inviting students into the material, many of today's textbooks dissolve into visual chaos. As high school English teacher Sara Kajder recently lamented,

> The publishers try to make these books attractive, jazzy, and up-to-date. And I understand, with all the boxes and gimmicks, that they are trying to give students multiple points of entry into the text. They are trying to make it feel like a computer or a video game, where the students feel some control. But those pages end up just being confusing and overwhelming. And it's the worst for my struggling readers. They can't make any sense of those pages at all. (personal communication, July 10, 2003)

The American Association for the Advancement of Science concurs. The AAAS, which counts both working scientists and science educators among its members, has been critically appraising science and math textbooks for several years. In its recent examina-

tion of middle school science texts, the AAAS found their design to be "hyperkinetic" (Budiansky, 2001). Reviewers complained that the text was "full of sidebars, boxes, and other presumably eye-catching special features bearing such titles as 'Flex Your Brain,' 'EXPLORE!', 'Find Out!', and 'Minds On!'"—features that distract from, rather than enhance, the content.

Authoritarian

In many schools and subjects, a single commercial textbook constitutes the entire curriculum for a specific course. At the fictitious Benedict Arnold High School, for example, the U.S. history course may simply be *The Americans* by Danzer and colleagues, or the Algebra II class might be nothing but *Advanced Algebra* by Senk and colleagues. In these courses, there may be no other readings, with the possible exception of a companion workbook (called a "consumable" in the business and prized for its profitability). Then, to make this exclusive franchise official, a teachers' committee types up the textbook's table of contents and slaps a cover on it, emblazoned with "Benedict Arnold High School Curriculum Guide: U.S. History." Or, more often these days, the textbook sales rep does that copying job, supplying matches between his company's book and every single state standard that the school labors under.

For a country espousing democracy as its form of governance, such sanctification of The Textbook provides a strangely incongruous apprenticeship. When we rely on a single source for all of a course's content, we are teaching students to accept one view, one authority. We are saying that it is right to depend on a single voice, even on complicated, value-driven questions. But smart and free people don't read this way. Instead, they recognize that most of life's biggest questions have not yet been settled and that science, technology, and even culture proceed on the best theory to date, not on some Final Truth. That's why mature readers use multiple sources to get a balanced view, hear the alternate theories, and make up their own minds. It is unacceptable for schools in a democracy to teach young people that only one view is sufficient—or permitted.

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Inaccurate

Textbook companies work very hard to make sure that their products are both timely and accurate. They have teams of fact-checkers scrupulously verifying information, and writers constantly creating updated editions every few years, to make sure that the textbooks include new findings, breakthroughs, or emerging theories. But it is not humanly possible to keep current—or correct (Raloff, 2001). In *Physics Today*, Hubisz (2003) reported on a study of textbook accuracy. In 12 physical science textbooks, Hubisz and his colleagues cataloged 500 pages of errors. A typical blunder: One textbook announced that "sound travels faster through warm air than through cold air," and 12 pages later noted "but sound travels faster in cold air." Some errors were trivial; others were grave. But, as Hubisz warns, all run the risk of making science appear confusing or even nonsensical to students.

Toward a Balanced Diet of Reading

If you share this concern about overdependence on textbooks, what can you do? As a classroom teacher, you can supplement your textbook with other readings. As a principal or curriculum leader, you can help your faculty make this change by providing encouragement, funding for new materials, and staff development on reading in the content areas. And if you are feeling really adventurous, you can step away from textbook-centered courses, at least for part of each year.

That's what we are doing at Best Practice High School, a small public school in Chicago that we helped design and open in 1996 (see www.bphs.cps.k12.il.us). Last spring, our entire senior class spent five weeks reading about the fast food industry and how it affects U.S. health, agriculture, values, laws, economy, and society. A cross-disciplinary team of teachers representing science, social studies, English, and special education designed the course, with help from faculty in math, technology, and art.

Like other thematic units at Best Practice, the Fast Food Project assumes that teenagers should not be "getting ready" to be lifelong learners—they should be acting like them right now. So the students read widely and dig deep. First, each student read Eric Schlosser's *Fast Food Nation: The Dark Side of the All-American Meal* (2002). Reminiscent of Upton Sinclair's *The Jungle*, but taking a wider aim, Schlosser's book is an old-fashioned muckraking exposé that lambastes every link in the chain of industrialized agriculture, up to its ultimate crudescence in fast food restaurants.

But the book was just the start. For scientific background (and also because the citywide curriculum mandates it), the students read the biology textbook's chapters on nutrition, digestion, viruses, and bacteria. Each student also chose

among several magazine articles, among them a *Fortune* magazine piece about lawsuits brought (and dismissed) against fast food restaurants for causing obesity; one from *Science* magazine, debunking the "fat myth" and arguing that fat may actually be good for you; and another from *Harper's* about how fast food companies intentionally target poor urban neighborhoods. Students read six short articles about animal cruelty that they downloaded from the Web site of the People for the Ethical Treatment of Animals, which sparked lively discussions about whether, for example, harvesting eggs or milking cows is really animal abuse. The more the students and teachers dug into the topic, the more relevant sources seemed to pop up everywhere. One great find was the National Restaurant Association's (2003) stinging rebuttal to *Fast Food Nation*, a press release quoting the book's negative reviews and arguing that Schlosser wanted to deny Americans "the food items that they love."

Lots of classroom and community-based activities grew out of and extended these readings. Students made anthropological observations at fast food restaurants, interviewed restaurant workers, kept personal diet journals, searched the Web for nutrition information, and joined in two elaborate simulations, one about life as a teenage employee in a fast food restaurant and another that dramatized the unionization of a slaughterhouse. The outcome of all this reading and investigating was 80 students with a lot of questions, concerns, and opinions. The final projects required students to perform some kind of social service around the issue of fast food. These ranged from polite letters to legislators to in-your-face leafleting at fast food restaurants around town. The self-reflections at the end of the unit showed how many students (not all—hey, this is a real school) were thinking more seriously about what food they ate.

We must also infuse the curriculum with authentic, real-world nonfiction—the kind of informational, expository, persuasive texts that adults read.

If we want students to actually remember information and care about the subjects taught in school, we must change what they read. We need to use textbooks more appropriately (and sparingly) as the reference books that they are, and we must also infuse the curriculum with authentic, real-world nonfiction—the kind of informational, expository, persuasive texts that adults read.

Luckily, the world is full of fascinating, important, debatable, and sometimes inflammatory nonfiction, from partisan magazines to primary source materials to stirring biographies to revisionist histories. If you join us in this quest for "real books" that can bring life and excitement to the classroom, you may also enjoy a personal benefit: rediscovering reading for yourself. When we educators make time in our crazy lives for reading, we don't just enhance our own enjoyment and find good books for classroom use. We also become a genuine (and humble) model of lifelong learning. Students need to know teachers who actively read, both in and beyond their subject fields, and who talk with genuine enthusiasm about what they are learning. ■

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The Learning Power of WebQuests

A well-designed WebQuest combines research-supported theories with effective use of the Internet to promote dependable instructional practices.

Tom March

When the Web was still young, Bernie Dodge, a professor at San Diego State University, came up with the idea of the WebQuest, a model for integrating the use of the Web in classroom activities. He defined a WebQuest as

> an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet. (Dodge, 1995)

In the early days, Bernie and I spent many hours developing the key attributes of a WebQuest, emphasizing the importance of combining authentic tasks with Internet resources to develop critical thinking skills. Since those early days, WebQuests have become a buzzword among educators. In fact, the WebQuest Page at San Diego State University (http://webquest.sdsu.edu) now receives more than 1,700 hits each day.

What WebQuests Are Not

Unfortunately, the implementation of WebQuests sometimes falls short. So-called WebQuests may bear a superficial resemblance to real WebQuests in that students use Internet resources to produce a technology-enhanced product. For example,

- A team of students plans a trip across the United States and presents its itinerary on PowerPoint slides. One student might be responsible for budgeting, one for locating tourist attractions along the way, and one for booking accommodations and organizing meals.
- Learners collect facts about and images of endangered species and create a poster to share what they have learned.
- Students create a brochure, a diorama, and an audio guide for a new exhibit on an exotic animal at a local zoo.

Although the above activities may involve some reasonable degree of learning, they are not WebQuests because the information in each activity can go from the browser to the product without altering—or even entering—the learner's understanding.

What Is a Real WebQuest?

In a real WebQuest, newly acquired information undergoes an important transformation within learners themselves. Getting information—the "learning input"—is the easy part. The WebQuest gets trickier and more interesting in the next part, in which transformative learning takes place and teachers and students can realize—or fail to realize—the potential of a WebQuest. How can WebQuests prompt the intangible "aha" experiences that lie at the heart of authentic learning? The use of powerful learning strategies differentiates real WebQuests from mere Web-based activities.

A real WebQuest is a scaffolded learning structure that uses links to essential resources on the World Wide Web and an authentic task to motivate students' investigation of an open-ended question, development of individual expertise, and participation in a group process that transforms newly acquired information into a more sophisticated understanding. The best WebQuests inspire students to see richer thematic relationships, to contribute to the real world of learning, and to reflect on their own metacognitive processes. Let us examine these powerful strategies more closely.

A Scaffolded Learning Structure

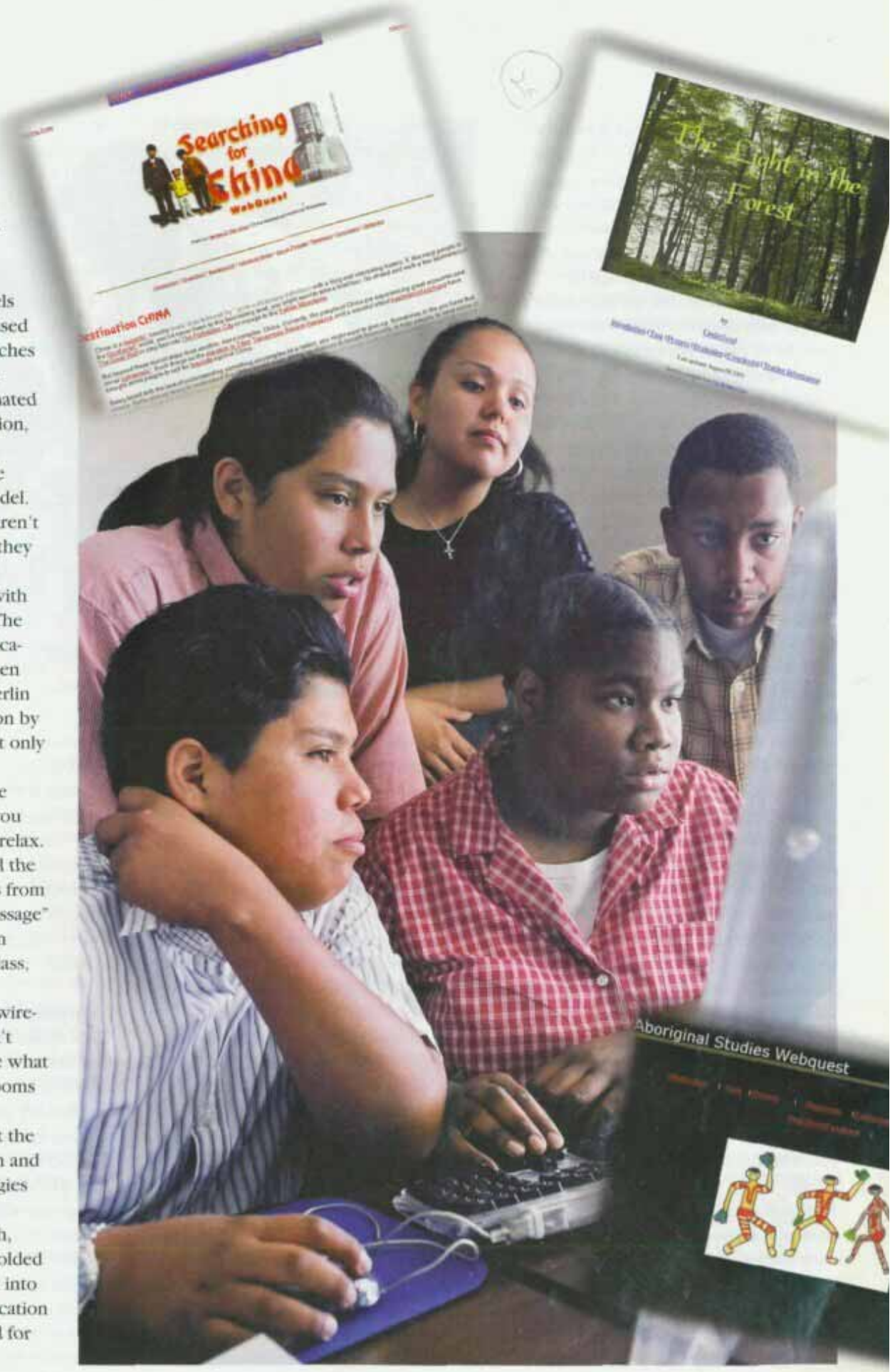
Research in cognitive psychology tells us that if we want novices to perform at more expert levels, we need to examine how experts go about their work and then prompt novices through a similar process. Teaching the writing process is a classic example. We ask students to do what expert writers do—brainstorm, draw pictures, compile lists, or make free associations—and then help them think about an audience and descriptive details. Scaffolding positively affects student achievement (Bereiter & Scardamalia, 1984; March, 1993) by providing "temporary frameworks to support student performance beyond their capacities" (Cho & Jonassen, 2002, p. 6). As students internalize more

advanced intellectual skills through ongoing practice, the teacher can gradually remove the scaffolded levels of support. Scaffolding is used to implement such approaches as constructivist strategies, differentiated learning, situated learning, thematic instruction, and authentic assessment.

Such scaffolding is at the heart of the WebQuest model. In this sense, WebQuests aren't anything new except that they provide a way to integrate sound learning strategies with effective use of the Web. The Web and related communications technologies have been able to chip away at the Berlin Wall of traditional education by making these strategies not only advisable, but essential.

If you disagree that these approaches are essential, you can stop reading now and relax. Your students will make all the adjustments: submit essays from schoolsucks.com; "text-message" one another real-time exam answers; or sit quietly in class, heads bowed over books, listening to Pink Floyd on wireless headphones ("We don't need no . . ."). This may be what is going on in some classrooms already.

When we recognize that the Web and other information and communications technologies require a more authentic, learning-centered approach, then the WebQuest's scaffolded structure enables us to put into practice the ideas that education theorists have championed for decades.



Use of Essential Internet Resources

Real WebQuests facilitate meaningful use of the Web for educational ends. Activities that point students only to encyclopedic briefs, textbook digests, or worse—word searches and coloring books—do not take advantage of Internet resources that are interactive, media-rich, contemporary, contextualized, or of varied perspectives. We should ask, Could students achieve this learning just as effectively without the Internet? If the answer is yes, let's save the bandwidth for something better.

Because the Web has matured from its early days, rich resources are more prevalent (March, 2000a). For example, the "Look Who's Footing the Bill!" WebQuest (www.kn.pacbell.com/wired/democracy/debtquest.html) invites students to participate in an interactive look at the U.S. budget, find out how to get more information about where the money goes, and then propose their own solutions for balancing the budget and reducing the national debt. In "Crool Zone" (www.kn.sbc.com/wired/nonviolence/intro.htm), a WebQuest series on creating nonviolent schools, students work on understanding the nature and extent of school violence and take on the perspectives of students, teachers, parents, or counselors to propose solutions to violence in schools.

A teacher's gentle orchestration of Internet experiences like these helps students develop their active understanding of the problem.

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Authentic Tasks That Motivate

For more than 20 years, John Keller's ARCS Model of Motivational Design (Keller, 1983, 1987) has provided a reasoned approach to increasing students' willingness to expend effort in their pursuit of learning. Real WebQuests should pass the ARCS filter: Does the activity get students' *A*ttention? Is it *R*elevant to their needs, interests, or motives? Does the task inspire learners' *C*onfidence in achieving success? Finally, would completing the activity leave students with a sense of *S*atisfaction in their accomplishment? The best way to address attention and relevance is to choose a topic that students find compelling and then create an authentic learning task related to it. Prompting students at crucial stages of the process inspires confidence. Differentiating tasks and establishing reliable sources for real-world feedback from people outside the classroom increase the likelihood that the student will experience the full cycle of motivation from attention to satisfaction.

Open-Ended Questions

As constructivists Savery and Duffy (1995) point out, "puzzlement" is "the stimulus and organizer for learning" (p. 31). A teacher can challenge students by "posing contradictions, presenting new information, asking questions, encouraging research, and engaging students in inquiries designed to challenge current concepts" (Brooks & Brooks, 1999, p. ix).

When a WebQuest poses an open-ended question, students must do more than "know" facts. Open-ended questions activate students' prior knowledge and create a personal curiosity that inspires investigation and brings about a more robust understanding of the material.

Individual Expertise

Once students have focused on a question and an authentic task, they begin the process of acquiring information. A preliminary stage, which we call Background for Everyone, helps all students gain a common foundation of knowledge in the general subject before developing expertise from one perspective. Without a common background of knowledge, students argue from preconceptions and stereotypes rather than from critical analysis of a wide range of sources. The Background stage also paves the way for differentiating

student activities in such a way that all students can master required knowledge and then pursue different levels of individual expertise. Of Tomlinson's (2000) four ways to differentiate learning tasks—by content, process, products, and learning environment—WebQuests support differentiation of content and process and give teachers the flexibility to vary final products and classroom routines as needed.

Typically, each student participating in a WebQuest assumes a role that helps a team of learners investigate an issue from more specialized perspectives. Students may work individually, in pairs, or as members of a "role team."

Is this WebQuest real, rich, and relevant? These questions form the three *R*s for assessing the value of a WebQuest.

These role-plays—personifications of particular viewpoints, such as businessperson or environmentalist—provide different perspectives from which to view an open-ended question. Students develop expertise in the subject from within a situated learning environment—that is, one in which "knowledge and skills are learned in the contexts that reflect how knowledge is obtained and applied in everyday situations" (Stein, 1998). Because students grapple with real issues that have no prescribed solution, we don't expect everyone to develop the same kind of expertise. Individual variations in understanding reflect the fact that all learners contribute different degrees of prior learning, effort, and ability as they construct personal meaning.

Transformative Group Process

A quick litmus test for the WebQuest's group process is to ask two questions. First, we ask, Could the answer be copied and pasted? If the answer is no, then we ask, Does the task require students to make something new out of what they have learned? Students must develop a substantively new concept and product, not merely provide a new compilation of information or an "original" mishmash of unprocessed facts. Scardamalia and Bereiter (1999) point out that

> Doing experiments or tramping the bushes collecting plant samples in no way guarantees that [students are engaged in solving knowledge problems]. Trying to make sense of information about a topic of interest almost always ensures that they are. (p. 278)

Simply activating pre-existing knowledge or accumulating information is significantly different from developing new knowledge and skills; students need problem-solving activities that require the use of critical thinking skills to develop new concepts (Bransford, 1985).

One way to transform the group process is to ask students to apply lessons from global problems to local issues. For example, students might address the classic question, How should we save the Amazon rainforest? Because potential answers to this question abound on the Web, leaving the question at this level invites a copy/paste solution. Shifting the focus during the group process to a global-to-local approach, however, encourages students to apply information they have gained from the global examples to a local scenario. For example,

> Use what you know about the Amazon rainforest to provide a solution to what should be done about the threatened habitat in our region or community. Be sure to justify your answer after considering the interests of the following stakeholders: ecologists, future generations, local inhabitants, and government officials.

Another way to transform group work is to ask students to use their assigned perspectives to predict near-future outcomes of current events. Students begin by learning about a current or upcoming event—such as the war in Iraq, El Niño patterns, or presidential elections—and then predict outcomes and effects. When students must base their opinions on evidence that comes from assigned perspectives—for example, a scientist, politician, student, or principal—we know that each group member contributes to this hypothetical answer.

Another transformative WebQuest strategy is to ask students to argue why a particular option will thrive best in a given situation. All too often, when younger students learn about the 50 states, a so-called WebQuest might ask them to retrieve information on natural resources, social policy, main businesses, climate, and history and then to make a slide presentation. This strategy becomes "Tag Team PowerPoint," in which students present what they have gathered from "research" without ever pooling the team's knowledge or processing new insights. A real WebQuest on the same 50-states topic begins with similar information retrieval, but students then face a more interesting challenge:

> On the basis of what you know about its natural resources, social policies, main businesses, climate, and history, which state of those that you have studied is most likely to be successful in the later 21st century? Decide what criteria you will use to define and evaluate what it means for a state to be "successful."

By engaging learners in a pursuit that requires them to use the acquired infor-

mation and expertise in a new way, WebQuests help students construct a deeper understanding and move through a crucial transition phase toward a more autonomous, learning-centered educational process. Without such engagements, wasted bandwidth is the least of our worries; more fundamentally, we misuse mind and time—the most precious commodities of classroom life.

What the Best WebQuests Do

A learning activity could stop here and be a pretty good WebQuest. But why not go for the best? Some WebQuests (see http://bestwebquests.com) leverage more learning by integrating other powerful learning strategies.

Students see richer thematic relationships. Is this WebQuest real, rich, and relevant? These questions form the three *R*s for assessing the value of a WebQuest. I have yet to hear of any topic that couldn't be made more authentic, interconnected, or up-to-date through strategic selection of Web sites and creation of personally meaningful tasks that entwine thematic and interdisciplinary relationships. Contextualizing the topic makes it worth learning: We can relate Picasso's *Guernica* to inner-city graffiti, *The Lord of the Flies* to street children in Angola, or the war in Iraq to school violence (March, 2000b). Research has shown that thematic teaching helps students understand the value of the subject, make logical connections across disciplines, transfer learning from one context to another, and develop a sound knowledge base (Lipson, Valencia, Wixson, & Peters, 1993).

Students contribute to the real world of learning. Innovative applications of authentic assessment increase the value of WebQuests. When "students have been involved in an authentic task involving 'ill-structured' challenges and roles that help students rehearse for the complex ambiguities of the 'game' of adult and professional life" (Wiggins, 1990), it makes sense to encourage learners to test their newly constructed knowledge with real-world feedback.

Educators play a vital role in securing in-person or online mentors, experts, collaborative classes, and policymakers who are willing to share their informed positions, and teachers can help students pursue such worthy initiatives as service learning; school-to-work programs; and partnership academies, in which students become interns for related partnering organizations. In addition to this real-world feedback, teachers construct rubrics to authentically assess student achievement. Qualitative descriptors for varying levels of achievement in a range of criteria guide student progress rather than simply measure completion.

Students reflect on their own metacognitive processes. Research shows that when students are aware of their own thinking patterns, they can develop independent use of effective learning strategies (Blakey & Spence, 1990). After all, the goal is not for students to do WebQuests forever or to blindly jump through these new and improved hoops, but rather to develop as independent, expert learners.

WebQuests by Tom March

Look Who's Footing the Bill!
www.kn.pacbell.com/wired/democracydebtquest.html

Crool Zone?
www.kn.sbc.com/wired/nonviolence/intro.htm

The Big Wide World WebQuest
www.kn.sbc.com/wired/bww

Searching for China
www.kn.sbc.com/wired/China/ChinaQuest.html

Little Rock 9, Integration 0?
www.kn.sbc.com/wired/BHM/little_rock

The Tuskegee Tragedy
www.kn.sbc.com/wired/BHM/tuskegee_quest.html

Learner-Centered Professional Development

WebQuests bring learner-centered principles from the realm of noble idea to daily practice. As the American Psychological Association (1997/2003) articulated, the implementation of these principles benefits both students and teachers. When teachers facilitate well-designed WebQuests, they gain in-process professional development, moving them toward learning-centered practice. As they internalize and share their experiences, we all benefit. ■

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Education for Sustainability

To bring about a secure future, students need to be fully engaged in creating a better world.

Susan Santone

What challenges will today's students face in the 21st century? Whenever I pose this question in a workshop, teachers generate a grim litany of global woes: widespread hunger, persistent poverty, environmental degradation, climate change, social instability, and threats of war and terrorism.

The next question—How are we preparing our students to create a more just, humane, and secure world?—typically gets fewer responses. As we probe this question, teachers give voice to real concerns affecting their practice: The world's problems are overwhelming; students try to distance themselves from painful realities; teachers can't think of examples of positive changes and don't have the time or support to research them. And with all the other pressures and mandates, why expend the energy or risk the controversy? In the end, the conversation comes back to a central theme: In spite of the obstacles, educators want guidance for helping their students shape a positive future.

A growing global movement is providing guidance for educators and a hopeful vision for the future. The movement is led by a groundswell of scientists, economists, business leaders, educators, policymakers, and citizens who are offering an intelligent response to the complex challenges threatening the earth's life support systems (Wackernagel et al., 2002). The movement—and the science behind it—is called *sustainability*.

The concept of sustainability rose to prominence with the 1987 publication of *Our Common Future*, a landmark report by the World Commission on Environment and Development. Outlining a systemic approach to development that emphasizes the relationship among ecological, economic, and social stability, the report called for a major international effort to improve human well-being while maintaining the long-term viability of the environment.

Since 1987, sustainable development

has been the focus of major United Nations conferences, including the 1993 Earth Summit in Rio de Janeiro, Brazil, and the 2002 World Summit on Sustainable Development in Johannesburg, South Africa. In the United States, a national panel produced *Education for Sustainability: An Agenda for Action* (Hulbert, Schaefer, Wacey, & Wheeler, 1997). The concept of sustainability drives an increasing number of community-based initiatives that focus on reducing sprawl, redeveloping urban areas, using renewable energy, and encouraging environmentally friendly businesses.

The goal of sustainable development is to increase human well-being while reducing negative human impact on the environment. The sustainability movement also seeks to democratize institutions, eliminate the exploitation of people and the environment, and achieve a more equitable distribution of resources and power.

A Vision of Citizenship

Sustainability education equips students to become informed, caring, and effective citizens. Do these goals sound familiar? They should. Creating effective citizens is a core mission of schooling. What does sustainability education offer that's different? And why bother introducing another topic into the overcrowded curriculum?

In fact, sustainability education does not add more content, nor is it a covert strategy to repackage environmentalism. Rather, sustainability education is a rigorous approach to lifelong learning that integrates academic, social, emotional, and civic competencies to ensure a prosperous and peaceful world for future generations (Wheeler & Bijur, 2000). Sustainability education envisions citizens not only as voting and obeying the law, but also as actively contributing to bringing about a sustainable world.

To develop this vision of citizenship, sustainability education infuses curriculum and instruction with concepts that link social, economic, and ecological systems; apply technology to solve, not create, problems; foster respect for all people; and nurture creativity, compassion, and cooperation. School facilities and designs reflect the values of sustainability through such practices as reducing waste and using energy efficiently.

Sustainability education seeks to answer the question, What kind of education do we need to create the future we want?

Connecting to Standards

Education for sustainability offers a way to connect standards across content areas, resulting in an integrated curriculum with opportunities for inquiry and authentic applications. Standards provide tools for outlining the important questions that students need to answer about their lives, communities, and futures.

> Sustainability education answers the question, What kind of education do we need to create the future we want?

Science and social studies courses already address several sustainability topics, such as ecosystems and global development. The concept of sustainability, however, spans all disciplines. In language arts, for example, students can hone crucial communication skills while using literature and writing to explore ethics and values. In math, students can use computational skills to analyze primary-source data as they address real-world issues. Sustainability education emphasizes higher-order thinking, decision making, collaboration, problem solving, and interpersonal communication—skills that students need in all subjects (Federico, Cloud, Byrne, & Wheeler, 2003; McKeown, 2002). Teachers across the curriculum can use sustainability in an integrative context, as the following examples suggest.

How Can We Improve Our Community?

In Ypsilanti, Michigan, a group of 6th graders worked with landscape architects to develop plans for a piece of blighted city land. Students mapped the area, inventoried plants, tested the soil, and researched native plants that could thrive on the site. To gain social and cultural perspective on the region, students interviewed local elders and created a city timeline using historic maps and archives. After developing their site models and preparing a budget, students presented their recommendations to city planners and enlisted the community to beautify the site during the annual City Pride Day. Through these activities, students integrated local history, botany, ecosystems, design, and math. They also developed skills in communication, inquiry, and problem solving.

In Ann Arbor, Michigan, a group of preschoolers and their parents turned a flood-prone park into a "wet meadow" that helps to clean storm water before it is discharged into the river. Students' curiosity about the soggy park turned into a community effort that gained the support of residents, local officials, and funders. With the help of the larger community, the young students interviewed residents about the park's condition, learned about the links between plants and water quality, and conducted a door-to-door education campaign about their efforts. The project has expanded to involve older students who monitor water quality as part of a for-credit service learning project.

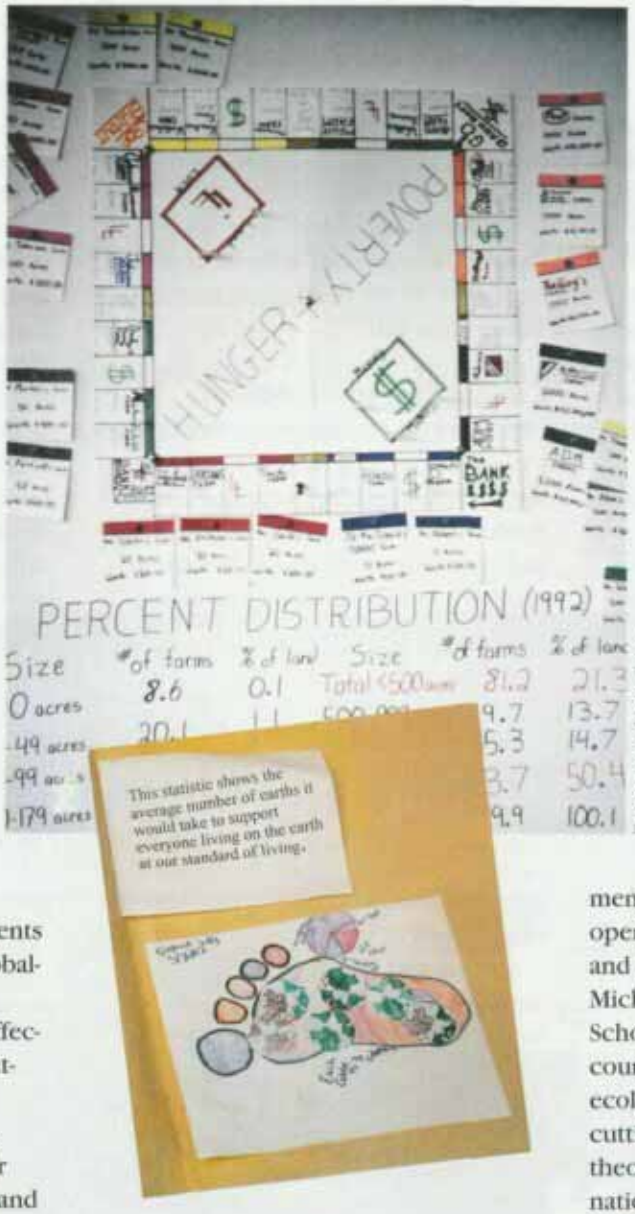
How Do Personal Choices Affect Others?

In Ypsilanti, Michigan, a group of fashion-conscious 8th graders asked, What are the social and environmental impacts of the sport shoes we buy? Students surveyed their peers to find out what influenced their purchasing decisions and what they knew about their shoes. From this investigation, students generated a list of questions about how

shoes are made, who makes them, and where they go "when they die."

To examine the environmental impact of production, students created a timeline of a shoe's "life story" from production through disposal (see fig. 1). The timeline extended 200 million years into the past—the origins of the oil in the vinyl—and thousands of years into the future, when plastic will break down in a landfill. This perspective spurred students to research new methods for reducing waste by recycling sport shoes into playground surfaces and carpet padding.

To investigate the social implications of shoe production, students researched wages and working conditions in factories in China and Vietnam and compared them with corporate profits per shoe and compensation for chief executive officers. Through a role-playing activity, students explored the relationship among globalization, capital mobility, and labor rights. Students also evaluated the effectiveness of campus boycotts of sweatshop apparel, codes of conduct for factories, and workers' rights movements. As a final application for their research, students developed social and environmental criteria for purchasing shoes and created educational materials to distribute to their peers.



Photos courtesy of Susan Santone

Students demonstrated the links between social and environmental issues by creating a board game and an illustration of human consumption of resources.

Beyond a Single Classroom

When fully implemented, sustainability education goes beyond individual classroom lessons to encompass all aspects of education. In the United States and abroad, public schools, universities, nonprofit organizations, funders, and governmental agencies are developing sustainability-based curriculums, software, and professional development programs, as well as "green" construction and facilities projects.

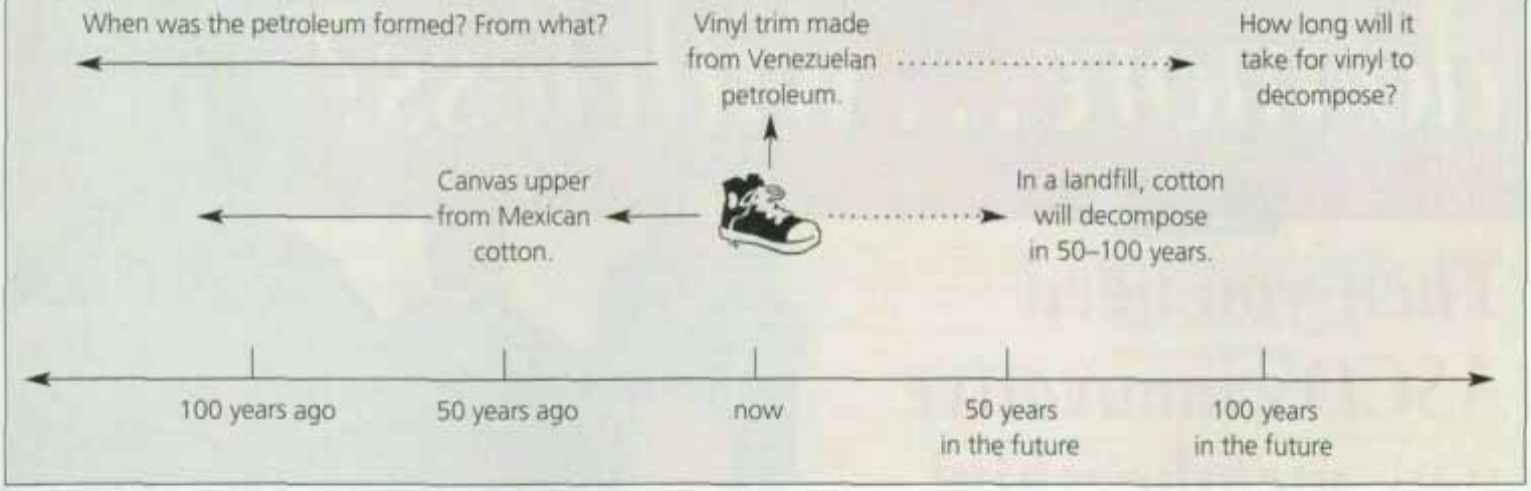
The Cobb County, Georgia, Public Schools, for example, collaborated with the Center for a Sustainable Future (http://csf.concord.org/esf) in Shelburne, Vermont, to develop standards-based curriculums and professional development around five key themes: thinking about the future, ecological economics, sustainable communities, global issues, and stewardship of natural resources. Funded through a U.S. Department of Education Technology Challenge Grant, the five-year project also produced three software programs on developing scenarios, designing sustainable communities, and measuring the impact of food, energy, and transportation choices on the environment.

In southeast Michigan, the Washtenaw County government, with additional support from the U.S. Environmental Protection Agency, has funded professional development and school-community partnerships that have engaged more than 1,000 students in hands-on learning about watersheds, land use, organic gardening, and local redevelopment. This yearlong sustainability education initiative demonstrated positive trends in achieving state education goals (Wefel, 2003). The Washtenaw County government continues to fund professional development of teachers and school-community partnerships as part of its own sustainability initiatives.

Colleges and universities are increasingly offering courses related to sustainable development and shifting to sustainable campus operations, such as food composting and using renewable energy. At Eastern Michigan University, for example, the School of Education offers graduate courses on teaching sustainability and ecological economics. By learning about cutting-edge economic and scientific theories that shape business and international policy, teachers will be able to integrate these concepts into their teaching and develop strategies to involve students in their communities.

In New York City, the Sustainability Education Center (www.sustainabilityed.org) works with the city's public schools to provide professional development on sustainability. Through a new high school course, Business Education and Entrepreneurship for the 21st Century, students learn how to develop successful ventures that meet the "triple bottom line" of financial, social, and ecological well-being. The Center's other programs, such as From World Hunger to Sustainable Food Systems, provide standards-based curriculums and after-school programs to involve students in hands-on learning about agri-

FIGURE 1 A Shoe's Life Story



culture, community gardening, and nutrition. And in nearby New Jersey, the nonprofit organization Global Learning (www.globallearningnj.org) has been instrumental in establishing a statewide schools network for maintaining sustainable school facilities and integrating sustainable development into the curriculum.

The Future of Sustainability Education

Sustainability education integrates and supports many recognized education goals, yet the term *sustainability* does not appear explicitly in any state standards, with the notable exception of Vermont's. Sustainability education has evolved as a largely decentralized movement, without a professional organization, national standards, or recognized journals. But influential organizations are increasingly recognizing the importance of the sustainability concept.

At the international level, the United Nations has declared 2005–2015 the Decade of Education for Sustainability, a move that will bring resources and attention to the field. Already, the United Nations provides resources for teachers and students on global issues (www.un.org/cyberschoolbus), and the United Nations Education, Scientific, and Cultural Organization (2002) has developed an extensive online professional development program called *Teaching and Learning for a Sustainable Future.*

In the United States, the National Council for Science and the Environment (2003) recently released a report that presented a national agenda addressing five crucial areas: identifying sustainability needs and practices, developing standards and programs, teaching sustainability concepts, communicating the issue to the public, and fostering business leadership of sustainable practices. Eight hundred scientists, educators, and decision makers presented the report to the U.S. Congress in June of 2003.

Sustainability education infuses a sense of purpose and relevance across disciplines while providing a rigorous response to academic mandates. In doing so, sustainability education can improve teaching and learning while preparing students for the biggest test of all: life. ■

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Future Shock

As students address local public health issues, a school and a community come together in a public health partnership.

Elizabeth A. Grady

Just how depressed were high school students after the events of September 11, 2001? Did the number of hate crimes rise in high schools as a result of those terrorist attacks?

Most people can only speculate about the answers to such questions. But at Cambridge Rindge and Latin School, a public high school in Cambridge, Massachusetts, students know how their classmates felt. They researched the topic in an innovative elective course in public health.

Entitled Future Shock: Practicum in Public Health Research Skills for Health Activism, the course is one of 10 such projects across the United States that seek to develop and sustain school-community public health partnerships by encouraging students to identify and address a local public health issue. In conjunction with the Robert Wood Johnson Foundation and as part of ASCD's Health in Education Initiative, ASCD funded the program from 2000–2002.

Future Shock came into being in 1997 as a result of collaboration among four high school departments at Cambridge Rindge and Latin (math, science, history, and language arts), the Harvard Graduate School of Education, and the Harvard School of Public Health. A Cambridge Rindge and Latin parent who held faculty positions at both Harvard institutions suggested the partnership.

Students Research Student Health

Cambridge Rindge and Latin School teachers were eager to work across disciplines, particularly in a grouping that merged the humanities with science and mathematics. The course, lasting one semester, sought to capi-

talize on students' fascination with predicting and envisioning the future, hence the title Future Shock. The teachers designed the course as an action curriculum in which everyday experiences would provide students with opportunities to become researchers and active agents in their community's health and in their own learning. Students researched topics that particularly interested them: the correlation between eating breakfast and being on the honor roll, the availability of health care insurance at the high school, the link between success in high school sports and success at a university, and the rate at which doctors put depressed teenagers on medication without giving them the option of other therapies. The teacher team believed that high school students could collect high-quality data and treat this material ethically and confidentially.

Such a program is a far cry from traditional health courses. Students collected, analyzed, and disseminated qualitative and quantitative health research data, developing useful and community-based snapshots of health issues that interested them. They researched such topics as patterns of drug use among teenagers, reasons why students smoked or didn't smoke cigarettes, the incidence of abusive relationships at school, and ways to increase student trust in the school environment and in the adults with whom they interacted in that environment. The course also countered an emerging trend in which schools reserve the study of statistics for advanced students. Future Shock was a multilevel, untracked elective, a course for diverse learners.

A key component in the course was the Student Health Data Report, a published analysis of the results of an extensive questionnaire that students at the high school fill out every other year. The questionnaire asks students about such topics as illegal drugs, sexual behavior, violence, pregnancy, and AIDS. As the "textbook" for the course, the report provided confidential data that students would use to define problems—the presence of weapons in the school, for example—and to research possible solutions by studying both contemporary and historical case studies in public health.

The teacher team believed that high school students could collect high-quality data and treat this material ethically and confidentially.

One student decided to research depression in teenagers. Although she had difficulty finding enough students diagnosed as depressed to make a statistically relevant sample, she discovered nonetheless that the entire sample of teenagers she did interview—18—had been placed on antidepressants without having been offered any form of alternative therapy, such as counseling or individual work with a psychiatrist. Her findings were eye-opening; both she and her classmates had thought that prescribing drugs for depression in teenagers would be a strategy of last resort. In the course of their research, students learned that their original questions didn't always have simple solutions and frequently led to new questions. They also learned the limitations of their research and suggested extensions of projects for future study.

The Complexity of Public Health

Public health policy and healthy adolescent decision making were unifying themes for the course's content, activities, and final projects. Early in the course, students looked at three public health crises—cholera in London during the 1860s, polio epidemics in the mid-20th century, and cancer resulting from industrial pollution. The students learned that health issues are primarily social and public, not individual, and that public health is a changing response to changing diseases and new social realities.

A behavioral solution to the source of contaminated water—"Just cap the water pumps!" cried the class—led to the more complex study of ethics and the realization that public health is far more complicated than it looks. Students addressed such topics as large-scale randomized trials of the polio vaccine, the complexity of causation versus correlation, genetics and the environment, and personal tragedies associated with cancer.

Anne Anderson, whose loss of a child to leukemia was a central event in the book and film *A Civil Action*, visited a Future Shock class to discuss how activism overcame what was "terribly wrong in Woburn," a Massachusetts town where two companies had been accused of contaminating municipal water wells. According to Anderson, her son's death "left a legacy that forced

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environmental issues, prevented illness, and saved lives." Students understood that a protracted legal battle was a long way from the simple solution of cutting off a contaminated water supply.

Midway through the course, students chose questions to research that had possible applications for adolescent health. Once students decided on individual research topics, they developed hypotheses and conducted preliminary research and literature reviews that required background information from a minimum of five cited sources and statements of predicted outcomes. Students then developed surveys to gather information, described their data collection methods, and discussed whom they had chosen to interview and why. They presented the collected data with charts and tables, explaining their calculations; they analyzed and interpreted the data, citing patterns and trends. They also looked for surprises and possible sources of error and reflected on how they might have done the work differently on the basis of this information. They finally decided whether or not their research confirmed or contradicted their original hypotheses, whether it added anything new to the extant literature on their topics, and whether the subjects warranted further study. Using a rubric, the students monitored and graded their progress. Each project culminated in a written report and bibliography, which students presented and defended in front of a committee of public health professionals from the community.

Student conclusions and recommendations have resulted in social action.

Although the topics that students chose might show up in the Student Health Data Report—drug use, for example—students took the topics in new directions. They looked into such areas as the relationship between drug use and certain genres of music, the relationship between early exposure to reading and improved academic performance ("The Cat in the Hat Takes the SAT"), teenagers' attitudes toward the death penalty, trying adolescents as adults in court, and the relationship between parent-child communication and drug use.

Students learned that this work was difficult. For example, two students decided to interview 400 students on their health care coverage. The sheer volume of work involved in interviewing, entering data, and compiling results proved daunting. Students spent long hours at computers and even enlisted friends to enter data. "It was huge," said one boy. "I never dreamed that crunching data could take up so much time." The pair found that the number of uninsured students at the school remained fairly constant from one administration of the Student Health Data questionnaire to the next. The researchers identified this group

and its needs and recommended that the school help uninsured students enroll in the Children's Medical Security Plan, which provides medical insurance to all children under the age of 18 who do not qualify for Medicaid and who cannot afford private health insurance.

Another student analyzed graduation rates for athletes at Division One schools. He obtained these data from Northeastern University's Center for the Study of Sport in Society, finding that male and female athletes (in 16 categories) graduate at a higher rate than the general population.

Working from a rubric, students analyzed their work, scoring themselves on how well they had reviewed the current literature, the extent of their survey, the accuracy and clarity of data presentation and analysis, conclusions and recommendations, and bibliography. They presented their final work publicly in a variety of venues: for panels of community health officials and at science and curriculum fairs.

Public Health in the High School

Through its participation in the ASCD Health in Education Initiative, the Future Shock program has entered its third year and achieved one of its original goals: interaction of high school students with city health agencies. Students present their researched topics to a panel of doctors, health care workers, and various public health and city officials. The Cambridge Health Department now offers student internships, and a health professional from the Cambridge Health Alliance currently teaches the course.

As part of program funding, a health professional developed cases in disease prevention and health promotion that targeted such issues as Cambridge's response to West Nile virus and town regulation of tattooing. These cases documented the history of public health in the 20th century as well as emergent concerns about adolescent health. They also highlighted the work of the Teen Health Survey, the instrument that culminates in the Student Health Data Report; and the Teen Health Center, a branch of the city hospital that, early on, proactively responded to concerns about AIDS by educating students about preventive measures.

The public health course is currently cyclical: The elective feeds into a summer workshop that recruits new students into the program for the following year and provides a forum in which the previous year's students can continue to refine or research topics of interest.

Student conclusions and recommendations have resulted in social action. The school now publicizes the medical insurance options available to uninsured students. It also developed an advising program for all students to make the school more sensitive to student problems. One student recommended that the local fire department should not run or service the fire engines in enclosed fire houses due to the threat of exhaust emissions. The students feel exhilarated by the possibilities and power of data-driven decisions, and the community is responsive and supportive. Perhaps the most important part of this work is the change in student attitudes, a quantum leap from apathy to agency.

The students feel exhilarated by the possibilities and power of data-driven decisions, and the community is responsive and supportive.

For two students, coursework culminated in presenting their original research at ASCD's 2002 Annual Conference. Said one of the student presenters,

> It was awesome. We presented our work to people who came from all over the country to this convention, and then they chose to come listen to us! They asked us tons of questions, but we could answer them pretty well. Best was that they made us feel that the work we did was really important.

The students had researched the effects of September 11 on the Cambridge Rindge and Latin School student population. And yes, their research did show that students at the school generally felt depressed after the attacks, but data also indicated that hate crimes based on such factors as race, ethnicity, and religion actually declined at the school in the months after the attacks.

"The school became a more sensitive and caring place for all its students after 9/11," said one student researcher. "And that was a really important thing to know." ■

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Healthier Students, Better Learners

The Health Education Assessment Project helps teachers provide the skills-based, standards-based health instruction that students need.

Beth Pateman

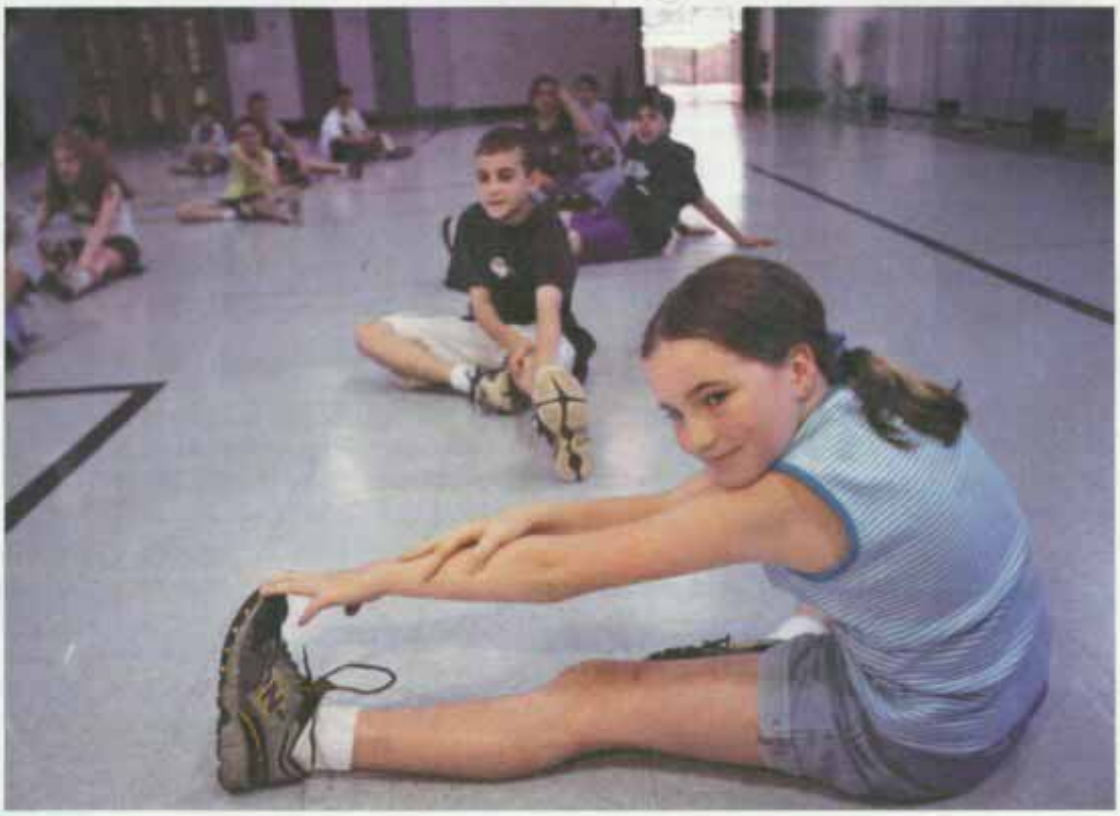
When we think back on health classes from our school days, many of us have only vague memories. We may recall some discussion of food groups, a film about puberty, or a lecture on dental hygiene conducted when the weather was too rainy to go outside for physical education. Few of us remember our K–12 health education experiences as being relevant to our lives outside the classroom.

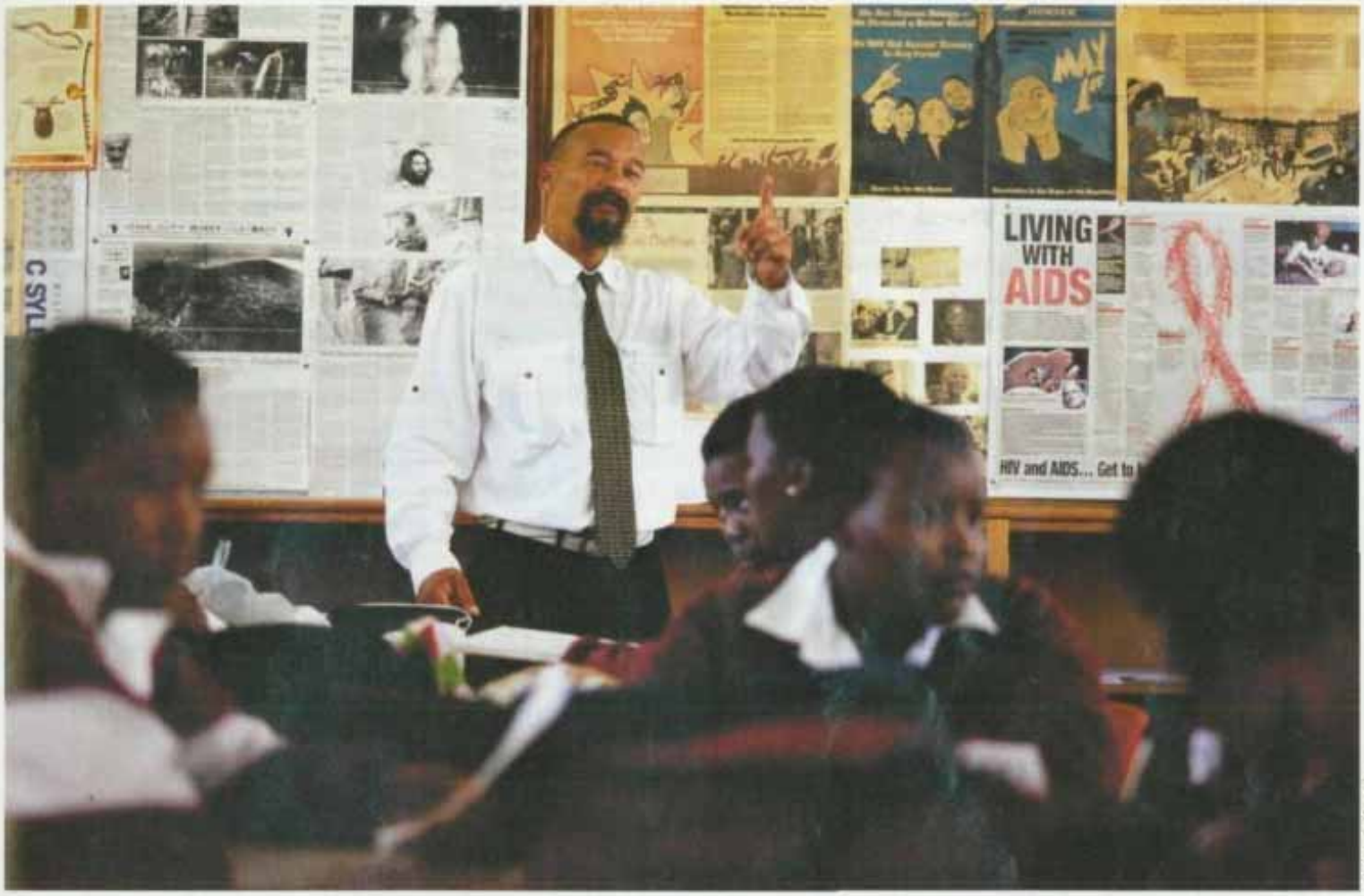
Fortunately, that picture is changing. Asserting that "healthy students make better learners, and better learners make healthy communities," the Council of Chief State School Officers (CCSSO) and the Association of State and Territorial Health Officials (ASTHO) (2002) have summarized compelling research evidence that students' health significantly affects their school achievement. Even if their schools have the most outstanding academic curriculum and instruction, students who are ill or injured, hungry or depressed, abusing drugs or experiencing violence, are unlikely to learn as well as they should (Kolbe, 2002).

Effective health education programs have a vital role to play in enhancing students' health and thus in raising academic achievement. Kolbe's 2002 review of the research found that modern school health programs can improve students' health knowledge, attitudes, skills, and behaviors and enhance social and academic outcomes. How do these modern health programs differ from those that most of us remember from our school days? Thanks to growing knowledge about how to prevent unhealthy and unsafe behaviors among young people, today's exemplary health education combines *skills-based* and *standards-based* approaches.

Focus on Skills

The Centers for Disease Control and Prevention have identified six types of behavior that cause the most serious health problems in the United States among people over 5 years old: alcohol





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and other drug use, high-risk sexual behaviors, tobacco use, poor dietary choices, physical inactivity, and behaviors that result in intentional or unintentional injury. Stressing the importance of education efforts, the Centers state that

> these behaviors usually are established during youth; persist into adulthood; are interrelated; and are preventable. In addition to causing serious health problems, these behaviors contribute to many of the educational and social problems that confront the nation, including failure to complete high school, unemployment, and crime. (n.d.)

In response to the Centers' focus on these major health-risk behaviors, education researchers have worked to identify educational approaches that positively affect health-related behaviors among young people. Many research studies have established the effectiveness of skills-based school health education in promoting healthy behavior and academic achievement (ASTHO & Society of State Directors of Health, Physical Education, and Recreation, 2002; Collins et al., 2002; Kirby, 2001). Lohrmann and Wooley (1998) determined that effective programs

Effective health education programs have a vital role to play in enhancing students' health and thus in raising academic achievement.

- Focus on helping young people develop and practice personal and social skills, such as communication and decision making, to deal effectively with health-risk situations;
- Provide healthy alternatives to specific high-risk behaviors;
- Use interactive approaches that engage students;
- Are research-based and theory-driven;
- Address social and media influences on student behaviors;
- Strengthen individual and group norms that support healthy behavior;
- Are of sufficient duration to enable students to gain the knowledge and skills that they need; and
- Include teacher preparation and support.

New Standards for a Skills-Based Approach

In 1995, the American Cancer Society sponsored the development of national health education standards that use a skills-based approach to learning (Joint Committee on National Health Education Standards, 1995). The standards, summarized below, advocate health literacy that enhances individuals' capacities to obtain, interpret, and understand basic health information and services and their competence to use such information and services in health-enhancing ways (Summerfield, 1995).

Together with the Centers for Disease Control and Prevention's priority health-risk behaviors, the national health education standards provide an important new framework for moving from an information-based school health curriculum to a skills-based curriculum. Skills-based health education engages students and provides a safe environment for students to practice working through health-risk situations that they are likely to encounter as adolescents.

An information-based approach to tobacco use prevention might require students to memorize facts about the health consequences of tobacco use, such as lung cancer, heart disease, and emphysema. In contrast, a skills-based approach ensures that students demonstrate the ability to locate valid information on the effects of tobacco use. Students learn and practice a variety of skills: For example, they use analysis to identify the influences of family, peers, and media on decisions about tobacco use and they use interpersonal communication skills to refuse tobacco use.

The skills-based approach outlined in the national health education standards helps students answer questions and address issues that are important in their lives. For example, young children need to learn how to make friends and deal with bullies. Older children need to practice a variety of strategies to resist pressures to engage in risky health behaviors while maintaining friendships. Early adolescents need to learn how to obtain reliable, straightforward information about the physical, emotional, and social changes of puberty. High school students need to learn to weigh their health-related decisions in terms of their life plans and goals. All students need to learn how to respond to stress, deal with strong feelings in health-enhancing ways, and build a reliable support group of peers and adults.

Health Education Standards

- *Standard 1: Students will comprehend concepts related to health promotion and disease prevention.* For example, students will be able to identify what good health is, recognize health problems, and be aware of ways in which lifestyle, the environment, and public policies can promote health.
- *Standard 2: Students will demonstrate the ability to access valid health information and health-promoting products and services.* For example, students will be able to evaluate advertisements, options for health insurance and treatment, and food labels.
- *Standard 3: Students will demonstrate the ability to practice health-enhancing behaviors and reduce health risks.* For example, students will know how to identify responsible and harmful behaviors, develop strategies for good health, and manage stress.
- *Standard 4: Students will analyze the influence of culture, media, technology, and other factors on health.* For example, students will be able to describe and analyze how cultural background and messages from the media, technology, and friends influence health choices.
- *Standard 5: Students will demonstrate the ability to use interpersonal communication skills to enhance health.* For example, students will learn refusal and negotiation skills and conflict resolution strategies.
- *Standard 6: Students will demonstrate the ability to use goal-setting and decision-making skills to enhance health.* For example, students will set reasonable and attainable goals—such as losing a given amount of weight or increasing physical activity—and develop positive decision-making skills.
- *Standard 7: Students will demonstrate the ability to advocate for personal, family, and community health.* For example, students will identify community resources, accurately communicate health information and ideas, and work cooperatively to promote health.

Source: Joint Committee on National Health Education Standards. (1995).

The Health Education Assessment Project

Standards-based health education requires a new approach to planning, assessment, and instruction. Although many educators are excited about the prospect of standards-based teaching in health education, they may lack a clear picture of what standards-based performance would look like in their classrooms. To address this need, the Council of Chief State School Officers' State Collaborative on Assessment and Student Standards initiated the Health Education Assessment Project in 1993 (see www.ccsso.org/scass).

The Health Education Assessment Project develops standards-based health resources through a collaborative process. Funding for the project comes from the Centers for Disease Control and Prevention and the membership fees of 24 state and local education agencies. During its first decade, the project has built a foundation for a health education assessment system, created an assessment framework, developed and tested a pool of assessment items, and provided professional development and supporting materials to help teachers implement the assessment system and framework.

A skills-based approach to tobacco use prevention ensures that students demonstrate the ability to locate valid information on the effects of tobacco use.

The project helps educators translate theory into practice. It provides educators with a wide range of assessment items developed in a variety of formats, including selected response, constructed response, and performance tasks (see the sample below). The project provides teacher and student rubrics for assessing performance and examples of student papers for scoring practice. Perhaps the greatest benefit to educators has been the hands-on professional development opportunities to practice aligning standards, assessment, and instruction for their own classrooms (CCSSO, 2003).

Classrooms in which students are evaluated by health education standards and criteria are substantially different from classrooms in which many teachers have taught and been taught. Teachers need hands-on preparation and experience with planning, implementing, and evaluating curriculum and instruction aligned with standards and assessment. The Health Education Assessment Project can improve the health of students by providing teachers with the tools they need to meet the important health needs of today's youth. ■

Sample Performance Task: Advocacy for Mental Health

Student Challenge

Your challenge is to select and examine a mental health problem, such as anxiety, depression, eating disorders, suicide ideation, bipolar disorder, or schizophrenia. Your tasks are to

- Locate and analyze valid information sources to determine the causes and symptoms of the problem.
- Explore treatment options and health-enhancing ways of managing the problem.
- Recommend helpful tips for talking with friends or family members who might be experiencing the problem.
- Provide a list of helpful community resources.
- Design a computer-generated brochure or presentation targeted to high school students that includes a summary of your information on causes, symptoms, and management/treatment; tips for talking with others; and a list of community resources.

Assessment Criteria for a Great Presentation

Your work will be assessed using the following criteria. You will be required to

- Provide accurate and in-depth information and draw conclusions about relationships between behaviors and health.
- Cite your information sources accurately and explain why your sources are appropriate.
- Provide specific recommendations for health-enhancing ways of managing stress and ways of talking with others about the problem.
- Demonstrate awareness of your target audience (high school students) and persuade others to make healthy choices.

Additional criteria may be determined by class members.

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Rich Tasks

Open-ended tasks involve students in connecting their learning to the real world.

Phillip Moulds

In our classrooms, we teach much more than just topics. Our approach to the content has considerable weight in how well we teach. Moreover, an individual teacher's design and implementation of a particular subject—be it addition, poetry, or geology—is likely to be quite different from the approaches of other teachers. For example, focusing on the events that led the United States to enter World War II is fundamentally different from teaching the same content through the question, Should U.S. President Truman have authorized the bombing of Nagasaki and Hiroshima? (Perkins, 2002).

As teachers strive to engage students in the learning process, make the content meaningful, and foster connections among ideas and disciplines, they continually make important decisions. How can teachers best provide students with effective learning experiences?

Designing *rich tasks*—purposeful activities that connect to the world beyond the classroom—offers one way to reconceptualize the curriculum and teach more effectively. By linking real tasks with traditional curriculum topics, teachers can approach topics in context, build student understanding, and make connections within and across topics and disciplines.

What Is a Rich Task?

Education standards and curriculum guidelines throughout the world are challenging teachers to make school-

Photos courtesy of Phillip Moulds

Year 12 students at Brisbane Grammar School in Brisbane, Australia, analyze water samples in the laboratory (top) and in the field (bottom).

based learning relate to the world beyond the classroom (Costa & Kallick, 2000; Marzano et al., 1997; Queensland Studies Authority, 2001). In Australia, the Queensland Studies Authority syllabus for preschool through year 12 (2001) emphasizes learning key concepts in real-world contexts, and Education Queensland (2001) recommends the use of rich tasks to invigorate such learning, defining a rich task as a

> culminating performance or demonstration or product that is purposeful and models a life role. It presents substantive, real problems to solve and engages learners in forms of pragmatic social action that have real value in the world. The problems require identification, analysis, and resolution and require students to analyze, theorize, and engage intellectually with the world. In this way, tasks connect to the world outside the classroom. (p. 5)

Education Queensland specifies that rich tasks should be *transdisciplinary*, drawing on practices and skills across the disciplines while retaining the integrity of the separate disciplines. Rich tasks, however, can also be *disciplinary*, making connections among concepts and processes within one discipline.

Criteria for Rich Tasks

We can use three criteria, similar to those proposed by Perkins (1992), to judge the value of a rich task: focus on the discipline or disciplines, abundant connections to a real-world context, and accessibility to students.

Focus on learning a discipline. Teachers have long made use of themes to teach geography, science, history, and mathematics. A theme can make a topic more accessible to students, but it does not necessarily use the approaches of specific disciplines. For example, a teacher may choose the theme of earthquakes for use in a year 7 classroom. The unit might involve locating earthquakes on a map with a coordinate grid, collecting data on earthquakes, and reading accounts of earthquakes. Students may cover a lot of content but not explore central ideas from one or more disciplinary areas.

Rich tasks move an important step beyond thematic units by focusing on the core ideas of the discipline, including subject-specific knowledge and its accompanying thinking processes. For example, as part of a transdisciplinary rich task, students might investigate how seismologists determine the epicenter of an earthquake.

Rich tasks invite an open-ended exploration of a topic, involve learning the language of a particular discipline, and demand complex reasoning processes.

Connections to a real-world context. The Queensland Studies Authority's pilot syllabus for chemistry (2001) defines a *context* as "a group of related situations, phenomena, technological applications, and social issues likely to be encountered by students" (p. 10), such as drugs, medicine, soil chemistry, fuels, and photography. Placing subjects in context helps make the curriculum more relevant (Fensham, 1994; Marzano, 1992; Perkins, 2002), and rich tasks are necessarily embedded in meaningful contexts. Beyond understanding context, however, rich tasks require students to apply their knowledge to real-world situations. In the study of earthquakes, for example, students might formulate risk assessments for constructing certain kinds of buildings in a particular place.

Accessibility to students. The power of rich tasks lies in their ability to actively engage students in the completion of a meaningful product. The connection to real-world problems motivates students and makes the material more accessible. To ensure accessibility, teachers need to

- Present the rich task and learning experiences leading up to it in a clear, logical sequence.
- Model precise communication, flexible thinking, and complex reasoning processes for understanding important concepts.
- Align classroom learning with the assessment task by providing students with opportunities throughout the unit to develop the thinking processes required to engage in the final task.
- Incorporate reflective activities that encourage students to question their understanding and thinking throughout the unit.
- Develop assessment procedures that emphasize students' understanding of important concepts and demonstration of complex thinking processes.

Enriching the Humanities

The topic of World War I appears in most junior high school courses. Typically, students look at pictures from textbooks, watch video presentations, and answer comprehension questions about the historical events. One different approach is to ask students to consider a specific question, such as Should Australian soldiers have been under the command of the British forces in World War I?

By moving away from the disconnected activities of the traditional unit to the more coherent problem-based approach, students become motivated to explore historical events and primary

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documents so that they can develop the knowledge and skills necessary to respond thoughtfully to the question posed.

This rich task offers students the opportunity to address ideas that are both central to the humanities and of personal interest to students, such as authority, independence, fairness, courage, and identity. Students make meaningful connections between concepts while developing their ability to reflect and communicate with clarity and precision.

The Brisbane River Project

In a unit on solubility and acid/base chemistry in a senior chemistry course, students investigated the water quality of the Brisbane River. Students needed to analyze data from a number of sampling sites along the river, compare and contrast their findings with government standards of water quality for recreational use of the river, and make recommendations for improving the river's water quality.

By using the task of assessing the water quality of the Brisbane River as a focus for the unit, students moved beyond the acquisition of discrete facts and processes to gain a dynamic understanding of the role that solubility and acid/base chemistry plays in the world's environment. For example, rather than just making solubility product calculations for predicting precipitates, students developed an understanding of the importance of the formation of precipitates at particular ion concentrations and noted the significance of this relationship to test sensitivity. This understanding demonstrated students' appreciation of the testing procedures and the ways in which the presence and the amount of different substances within a water sample may affect the data collected.

Before engaging in the Brisbane River task, students needed to develop the knowledge and complex reasoning processes necessary for completing the task successfully. They first studied the variation in solubility of a number of substances over a wide temperature range, analyzed tables and graphs and learning concepts central to understanding solubility, and practiced the process of classification as they developed operational definitions for acids and bases.

For rich tasks to be successful, the preliminary learning experiences that students complete must connect directly to the culminating task. The preliminary learning experiences of the Brisbane River project included experimental activities that developed students' understanding of solubility, acid/base chemistry, and the scientific process. For example, students experimented using two different procedures to determine the chloride concentrations of water samples that did not come from the Brisbane River. The samples that students tested showed a wide range of chloride concentrations, preparing students to determine the presence of chloride ions in the Brisbane River water samples. Students considered which procedure was more suitable for measuring concentrations of chloride ions in the Brisbane River and then justified their conclusions.

For the culminating product of the unit, students wrote reports that drew on their readings, evaluated data from their water samples, discussed the implications of their findings, and argued for specific ways to improve the water quality of the Brisbane River. The reports began by presenting the river's current state, including its geography

and industrial, agricultural, and recreational uses.

Students then presented maps, descriptions, data, and observations from each sampling, including tables and graphs that identified trends and comparisons among sites. The reports discussed the testing procedures and their accuracy, analyzed and interpreted the data collected at each site, and identified patterns related to local land and river use. Referring to standards for the recreational use of water bodies, students assessed the current water quality of the Brisbane River and made carefully argued recommendations for improving the river's water quality. They subsequently forwarded their recommendations to a number of government agencies and professional organizations for their consideration.

The power of rich tasks lies in their ability to actively engage students in the completion of a meaningful product.

Assessing a Rich Task

Traditional assessments of chemistry units about solubility and acid/base chemistry are typically pen-and-paper tests administered at the completion of the unit. The work within the unit progresses from one aspect of the topic to another, with the test sampling student performance in these different areas. Without a clear vision of what students should be able to do with their understanding apart from answer the test questions, teachers often fail to impart a sense of connection between the concepts or a realization of how their learning activities apply to the real world. Both formative and summative assessment suffer, focusing only on students' knowledge of discrete facts and ability to perform certain calculations rather than on an understanding of central solubility, acid/base ideas, and the multifaceted nature of chemistry as a discipline. Traditional assessments show what students can do and remember, but they do not reveal whether students can understand and apply the core concepts in a meaningful context.

Throughout the course of the Brisbane River unit, classroom learning experiences enabled students to complete the task successfully, thereby aligning the planned, enacted, and assessed curriculum. To evaluate student work on this rich task, the rubrics assessed and provided feedback on student performance. Students' responses in their Brisbane River reports demonstrated that students had gained a deep understanding of solubility and acid/base chemistry, the processes of science, and science's connections to the real world. Students presented sophisticated arguments that made use of the evidence that they had gathered and of their new understandings of chemistry to recommend ways to improve the water quality of the Brisbane River.

Teaching in Depth

Rich tasks are consistent with current calls for reforms in school-based education and for greater emphasis on higher-order thinking, deeper understanding of core concepts, and better communication skills. Rich tasks also corroborate the research conducted by Anderson and colleagues (1994) showing the value of "less is more": teaching fewer concepts in greater depth rather than teaching more content.

Simply incorporating a topic into a theme or context does not constitute a rich task; instead, rich tasks invite an open-ended exploration of a topic, involve learning the language of a particular discipline, and demand complex reasoning processes. Through the use of rich tasks, teachers and students can develop deep understandings of the world. ■

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Voices: From a Charter School

Shaping a School Culture

Diana Shulla-Cose and Kimberlie Day

The faded yellow structure on South Federal Street in Chicago draws little attention, but what's going on inside is worth a closer look. The little building is home to Perspectives Charter School, which serves 155 inner-city students in grades 6–12, 86 percent of whom come from low-income homes. The students are culturally diverse: 51 percent are African American, 46 percent are Latino, and 3 percent are white.

Perspectives—which in 1998 was granted one of the Chicago Public School District's first charters—can operate differently from other public schools, and the possibilities excited us as we sat down to create our vision for the school. After careful thought, we came up with "A Disciplined Life," a set of ideals that encompass 21 broad-ranging principles centering on themes of self-perception, communication, and productivity.

The principles include such goals as "Take responsibility for your actions," "Respect one another's differences," and "Demonstrate honesty and integrity." Much more than platitudes or rules for students to follow, A Disciplined Life is the foundation on which our students, teachers, and administrators are expected to live day in and day out. Our goal is to create a culture in which urban students can thrive and feel a sense of belonging. In the long term, we hope to provide students with the life skills that will help them acquire both a love of learning and the ability to succeed in college and the workplace.

Perspectives is a school of high expectations. Unlike magnet schools, however, we cannot screen or test applicants to identify higher-achieving candidates. Instead, with a waiting list of several hundred students, we use a blind lottery system to enroll students. And we believe that all of the students we admit, no matter how they have performed in the past, have the potential to excel. We try to teach them that it's "cool" to succeed academically. One 8th grade student says,

> It's safe to be smart here and to seek knowledge. When you ask a question, you don't get laughed at. You get supported.

Our goal was to create a culture in which urban students can thrive and feel a sense of belonging.

Also key to our school culture is the idea of connecting with the community. We strive to connect students to the business, commercial, cultural, and political arenas of their city and provide them with opportunities to learn about and feel a sense of ownership in their community. We encourage students to ask questions about the relationships between the curriculum and their community: What does it mean to have a strong relationship with my community? Am I a citizen who positively contributes to my city?

The shared culture and philosophy at Perspectives permeate every relationship in the school—student-to-student, teacher-to-student, and administrator-to-teacher. Teacher Mary Cummane notes that A Disciplined Life helps teachers

> build relationships with students because we all understand the culture and the expectations. We're not just teaching a particular subject. We're teaching students what's expected of them.

A few of our students' stories help illustrate how the relationships built within the framework of A Disciplined Life have had a direct impact on young lives.

James, Grade 12

James first came to Perspectives as a troubled 7th grader. Removed from his home as a child because his mother was unable to care for him, he expressed his resulting anger and hostility by acting out. Now headed for the University of Illinois on a full scholarship, James notes that

> The teachers at Perspectives have worked with me over the years to find ways to better manage my anger, and it's helped. It's been hard, but the teachers listened and they set expectations for me. When I entered this school, I never thought I would ever finish. . . . Perspectives has made me a man. I'm compassionate, responsible, and driven.

John, Grade 12

"Before this school, I was selling on the streets with no thought of college in my future," says John. "My grades when I came here were all *D*s and *F*s, but the people here care a lot and are there for you." At a recent honor roll assembly meeting, John asked to read his transcript aloud, beginning from Grade 7, when he had nearly flunked out of school. He now earns *A*s and *B*s and will be attending Hampshire College in the fall. He says that A Disciplined Life has "made me a better person and I can take it with me wherever I go."

Angel, Grade 10

Lured early into gang life, Angel wasn't quite ready to give up his old ways

when he landed at Perspectives. "There was a guy who looked at me the wrong way," Angel says, "and my first instinct was to hit him. But the teachers and codirectors talked to me. They showed me that they cared about me and I'd never had that before." Now, he says, "I've been told I'm smart by so many of my teachers that I really believe it now, too." Today, Angel is on track to graduate from high school because he has a solid support system that is teaching him to resolve conflicts positively and to strive to reach his potential.

Courtney, GED Candidate

Although we are deeply committed to all of our students, we do not reach immediate success with everyone. Courtney came to us in 1998 as a sophomore who could not read. She was disenchanted and had low self-esteem, but because she knew the doors here were open for her, she came to school every day. We tried everything we could to motivate her. We had countless meetings with her family, offered one-on-one reading sessions, and provided mentoring opportunities. Despite our efforts, Courtney failed to graduate with her class.

But the foundation and relationships that we had laid had an impact. Courtney recently called one of her former teachers at Perspectives and said, "I want to learn to read." The teacher met Courtney at a downtown bookstore to purchase General Educational Development (GED) booklets. They'll be working together this year to help Courtney prepare for the exam.

Practicing Our Principles

Perspectives is not without its conflicts. Earlier this year, the issue of race took center stage following the holiday of Cinco de Mayo, which we celebrated with a lunchtime feast. We later learned that some of our African American students were upset by the event because we had not held a similar "party" during Black History Month. Although we felt that we had gone to great lengths to mark Black History Month, some of our students perceived that our school was being more celebratory of Latino than African American events.

As educators, our responsibility goes far beyond helping students achieve good grades; equally crucial is building strong bonds with our students.

These students sat down with us to discuss their concerns and identify solutions. As the conversation began to take a confrontational tone, one student interjected that "We've got to be careful. Why is this an 'us versus them' discussion?" After working with the students, we asked them to lead an all-school discussion on the issue.

The ensuing discussion showed us that our approach was working. It was an opportunity to engage in dialogue, involve students, and surface grievances for the good of the entire school. Such dialogue teaches our young people fair and just language to use when communicating about issues they feel deeply about.

The Personal Touch

As educators, our responsibility goes far beyond helping students achieve good grades; equally crucial is building strong bonds with our students. Accordingly, we have made active listening a vital part of our school culture. Such simple questions as "What did you think of math class today?" engage our students and help them believe that they are part of the world of the school. One student, Kendra, had no confidence as a learner when she first arrived at Perspectives, yet she is headed for college in the fall. Kendra recently told a visitor, "They love me here!" Students come here every day because they know that we care about them and want to help them succeed.

We have probably all had a teacher who made a difference in our lives. At Perspectives, we work toward being those kinds of educators, ones who never give up on their students. Nearly half of Chicago's high school students drop out before earning a diploma, but Perspectives has graduated 100 percent of its high school seniors for two years in a row. All the graduates will continue to college.

We are here to help our students rebound when they fall. It is our work to have faith in them when they don't have it in themselves. It is our job to ask the hard questions, listen well, keep expectations high, and give students encouragement and love. Once students know this, they rise to meet their challenges to make themselves, their families, and everyone at Perspectives proud. ■

Diana Shulla-Cose and **Kimberlie Day** are Codirectors of the Perspectives Charter School; www.perspectivescs.org.

Review

Who's Teaching Your Children? Why the Teacher Crisis Is Worse Than You Think and What Can Be Done About It

Vivian Troen and Katherine C. Boles, 2003

We hear a lot of glib talk today about the importance of teachers, even as education policy seems to focus more and more on treating teachers like interchangeable hired hands. Teachers in schools that are heralded by the press—in Houston, for example—talk to me in whispers for fear that they will be fired if they diverge from the party line. They tell me that their lesson plans must be downloaded daily from their district-supplied computers. Although the polls indicate that people trust teachers more than any other public official, we have circumscribed that trust with so many rules and regulations that we don't get the best from our teachers.

The authors of this important book, two experienced classroom teachers and teacher educators, join scholarship with classroom experience to examine how we can improve the odds that all students will have good teachers. Troen and Boles use data and historical and contemporary stories to illustrate three problems that make high-quality teaching nearly impossible. First, the field is not attracting the people our schools need—intellectually strong-minded and curious young adults. Second, those who are attracted to teaching don't receive the right kind of preparation; they get more years of education but not enough firsthand experience of what good schooling looks like. Third, the schools that new teachers enter are not generally equipped for continued professional learning.

The authors offer "a new model for a new era"—the Millennium School—that would restructure the teaching profession. They propose ways to create a more collaborative school culture and to forge a new relationship between elementary schools and universities to improve on-the-job training and professional development.

The Millennium School model reminds me of the Carnegie blueprint, *A Nation Prepared: Teachers for the 21st Century*, which led to the formation of the National Board for Professional Teaching Standards 20 years ago. The 21st century is here, but if anything, we've moved further away from that vision. As we knew then and as Troen and Boles remind us now, the goals of changing our schools and transforming our teaching force are intertwined. We will not get fundamentally stronger teaching without fundamentally different schools, nor will we get better schools without stronger teachers. This book should be read not just by teachers and teacher educators, but also by parents, citizens, and policymakers—by all those who need to speak out for children.

Published by Yale University Press, P.O. Box 209040, New Haven, CT 06520-9040; (203) 432-0960; www.yale.edu/yup. 224 pages. $24.95 hardback.

—Reviewed by Deborah Meier, Coprincipal of the Mission Hill K–8 Public School in Boston and author of In Schools We Trust *(2002, Beacon Press)*

Research Link

Student Teamwork

John H. Holloway

When employers are asked what qualities will best prepare students for the modern workplace, they often mention teamwork—the ability to cooperate and communicate with others to reach common goals. As Brown points out,

> Group effectiveness skills, including interpersonal communication, negotiation, and teamwork, are essential in today's diverse classroom and workplace. (2001, p. 1)

School practices, unfortunately, often emphasize competition and individual achievement over collaboration and group achievement. Cooperative learning, a strategy that has grown in popularity since the 1970s, offers a way to not only enhance student achievement but also give students the opportunity to develop teamwork skills. By using cooperative learning groups for some instructional activities, teachers can help students develop problem-solving skills and the social skills that they will need to work with others in such areas as communication, leadership, and decision making.

Simply setting up cooperative learning groups, however, does not automatically foster students' teamwork skills. Teachers need to structure groups appropriately. Several recent research studies have examined the conditions that facilitate student teamwork and give students positive experiences in working with their peers.

Sufficient Time

Mueller and Fleming (2001) observed and conducted interviews with cooperative work groups of 6th and 7th graders to gain insights into the "internal mechanisms" of these groups. The researchers concluded that although there are frustrations and inequities in such groups, the accomplishments of the groups outweighed these problems. Students in the study generally developed teamwork skills and felt positive about engaging in group work. Students identified three conditions that made the groups function well: sufficient time for group participants to talk and plan; opportunities to exchange ideas with others; and the chance to present their findings to one another and to outsiders.

Students in the study generally developed teamwork skills and felt positive about engaging in group work.

Eastman and Swift (2002) found that teachers often assigned group projects without allocating class time for groups to develop cooperative skills or become cohesive. Perhaps as a result of this lack of time, groups frequently failed to work together effectively. Groups often simply divided a project into individual portions for each group member to complete.

Careful Planning

Mueller and Fleming (2001) also found that teachers needed to play a central role in setting up conditions for collaborative learning and opportunities for enhancing student teamwork skills. This requirement presented problems, the researchers found, because many teachers were uncomfortable with the collaborative approach.

Ettington and Camp (2002) found that when teachers provide proper advanced planning, student teamwork skills improve. Specifically, teachers must first design group tasks with explicit consideration of objectives for skill development and content learning. Next, teachers must create groups that will use the skills required for the task. Third, teachers must monitor group progress to ensure that students are developing the skills. Finally, teachers must evaluate and reward the development of group process skills. Anticipating this evaluation and reward process positively affects student motivation and teamwork.

Training in Group Skills

Gillies and Ashman (1998) found that students who were trained in cooperative group processes worked together better and were more committed to their group than were students who did not receive such training. Gillies (2002) examined the long-term effects of such training. She studied 5th grade students in mixed-ability groups who had received training two years earlier in small-group interpersonal behavior and cooperation. These students engaged in more cooperative behaviors—listening to one another, sharing resources, and staying on task as a group—than did their peers who had received no explicit training in group skills.

Teamwork Outside the Classroom

Pellegrini and his colleagues (2002) found that students can learn teamwork

School practices, unfortunately, often emphasize competition and individual achievement over collaboration and group achievement.

skills in the early grades and not necessarily in the classroom. The games that children play at recess are an important developmental activity, especially for boys. These researchers found that children used their facility with games to achieve social competence with their peers and adjust to early schooling. Further, the researchers found that the social rules and roles that children learn with their peers on the playground and the classroom foster rule-governed behavior and cooperative interaction with peer groups.

Teacher Training

Lopata, Miller, and Miller (2003) found that teachers who participated in professional development for cooperative learning were more likely to engage students in activities requiring teamwork skills. These researchers found that to be successful, this professional development must focus on the collaborative components of cooperative learning—specifically, positive interdependence, face-to-face interaction, and group process.

Learning teamwork skills is an important developmental process for students, one that will serve them well as they embark on their adult lives in a diverse society and workplace. By providing positive, well-planned experiences working in cooperative learning groups, teachers can help students develop these skills even in the earliest years of schooling. ■

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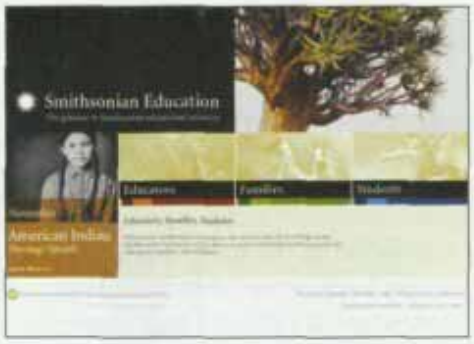
Web Wonders

New Needs, New Curriculum

As the world changes, the notion of the schoolhouse is changing, too. Educators are developing new ways to teach in a global society in which communication technologies rule, national economies are tightly intertwined, and genuine cultural exchange is more important than ever.



The Smithsonian Education Web site offers extensive resources for teachers, students, and families.

Web Windows on the World

As *EL* author Stephanie L. Norby points out (p. 48), museums—long the repositories for artifacts of world history, science, and culture—are taking advantage of the Web to bring primary sources into the classroom. The Smithsonian Institution recently revamped its Smithsonian Education Web site **(www.smithsonianeducation.org)** to include offerings from each of its museums. The detailed information helps teachers, students, and families gain the most from museum collections, whether they are gathering ideas for a class lesson on aviation history or questioning techniques before and after an on-site visit.

Students of today—and tomorrow—also need skills in information literacy to help them sift through the streams of the world's media. Go to the National Forum on Information Literacy **(www.infolit.org)** to discover more about the literacies that are coming into their own, including health, business, and visual literacies. Further links from the site provide students with tips and strategies in information literacy.

The Role of the Arts

If you think schools of the future can afford to downplay the arts, think again. Although many districts are giving arts budgets short shrift these days, future jobs in the arts will increase 130 percent over other job categories. In addition, the arts can help students gain skills in perception and problem solving, according to the British Columbia Art Teachers' Association online art guide *How Can I Help My Child in Art?* **(www.bctf.ca/BCATA/downloads/advocacy.pdf)**.

An online article by *EL* author Elliot W. Eisner (p. 6) **(www.unlv.edu/faculty/mannlein/llm/RoleDBAE.html)** discusses discipline-based arts education and its goal to foster in students the ability not only to create art, but also to critique it and understand its place in our culture. Eisner argues that arts education is crucial for opening up students' mental capacities to "think visually, to tolerate ambiguity, to exercise our imagination, to notice nuance, to perceive relationships between part and whole, to experience the expressiveness of form"—all skills that can help students successfully prepare for their future world.

Future Trends

For a glimpse at what that world may look like—economically, socially, and demographically—and how it will influence schools, check out a report from the Education Commission of the States. "Future Trends Affecting Education" **(www.ecs.org/clearinghouse/13/27/1327.htm)** predicts that we will see an increased emphasis on highly personalized learning, student achievement, accountability, and school choice.

Environmental Concerns

EL author Susan Santone (p. 60) describes how the environmental movement renewed itself in the 1990s through various domestic and international forums that marked out steps for further action. *Education for Sustainability: An Agenda for Action* **(www.gcrio.org/edu/pcsd/toc.html)** may prove useful for taking a closer look at the use and care of the world's natural resources. In an age of dwindling resources, education for sustainability seeks to link the three *E*s of environment, economics, and equity with the traditional three *R*s of reading, writing, and arithmetic.

Recommendations for Education for a Sustainable and Secure Future **(www.ncseonline.org/NCSEconference/2003conference/2003report.pdf)** reports on discussions at the 2003 conference of the National Council for Science and the Environment. Using input from scientists, educators, and policymakers, the report calls for lifelong learning about the environment and wise use of the world's resources.

The Public Square

Despite all the changes that the future has in store, the civic mission of public schools will continue to be of paramount concern. In *The Civic Mission of the Schools* **(www.civicmissionofschools.org)**, a 2003 report by the Carnegie Corporation of New York and the Center for Information and Research on Civic Learning and Engagement, experts remind us that to fulfill such a mission, schools must train students in the political skills and civic virtues that enable them to recognize the "rights and welfare of others" to develop a commitment to making a difference in public life. ■

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The Communication Age: The 1990s and ASCD

Today, computer technology touches every aspect of our lives, affecting the way we learn, work, shop, and share information. It's difficult to remember that at the beginning of the 1990s, most people had never heard of the Internet.

Hyperlink and HTML became publicly available in 1992, making the World Wide Web possible. A year later, fewer than 200 Web sites existed (Kantor, 2003), but by 2001, 30 million Web sites encircled the globe (Wright, 2002).

ASCD recognized early on that new information technologies would transform its member services and communications. The association's Technology Futures Commission, comprising a cross section of ASCD staff members, representatives of the board of directors, and selected technology futurists, released a report in 1995 recommending that ASCD use technology to create "communities of inquiry"; provide equitable access to information; increase productivity and the quality of services; provide programs, products, and services in a timely manner; and extend ASCD's influence (ASCD, 1996). In 1996, ASCD launched its first Web site. (Visit http://web.archive.org/web/sa_/http://www.ascd.org to view the original site.)

ASCD also wanted to help school leaders use the new information technologies to improve teaching and learning. *Educational Leadership*'s April 1994 theme, "Realizing the Promise of Technology," contained several articles pointing out that schools lagged far behind the rest of society in using computers and related technology. David Thornburg stated, "Many schools have barely entered the Information Age" (Betts, 1994, p. 20). Kyle L. Peck and Denise Dorricott complained that "businesses have been building electronic highways while education has been creating an electronic dirt road" (1994, p. 11). Articles in the issue covered many emerging applications of technology, from laser videodiscs to microcomputer-based labs. The Web, however, was not yet in the picture.

Just 18 months later, articles in the theme issue "How Technology Is Transforming Teaching" described how students were using the Web for research, sending e-mails to people in other countries, consulting CD-ROMs for information, and preparing multimedia reports. But in the issue overview, Ron Brandt (1995) acknowledged that only a "few teachers in a relatively small number of schools possess the equipment and knowledge to have their students do the sorts of things described in this issue." And he identified a problem that persists today: "If technology is used simply to automate traditional models of teaching and learning, then it will have very little impact" (p. 5).

Throughout the decade, *Educational Leadership* themes revisited the topic of technology many times, tracking the latest developments and the evolving concerns of educators—from debating the merits and perils of wiring schools and creating school Web pages (November 1996) to shopping for technology and providing professional development for teachers (November 1997) to integrating technology into the curriculum (February 1999).

Although we now take computers and online connections for granted in public schools, the question still remains: Is this technology transforming and improving education? As Tom March's article in this issue (p. 42) shows, we now know much more about how to use the Internet to provide rich, authentic learning experiences for students. The ongoing information revolution will shape the future of schools—and ASCD members will continue to lead the way.

This concludes the series celebrating ASCD's 60th anniversary. ■

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—Information compiled by Deborah Perkins-Gough, David Snyder, and Ben Licciardi

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Through ASCD publications, educators discuss the most significant ideas in the field of education. If you would like ASCD to consider publishing a book that you have written or plan to write, send a book proposal and sample chapters to Scott Willis, Director of Book Acquisitions, ASCD, 1703 N. Beauregard St., Alexandria, VA 22311-1714 USA. For more detailed information, visit www.ascd.org/readingroom/books/authorguide.html.

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